



**THE FIRST INTERNATIONAL
SCIENTIFIC AND PROFESSIONAL CONFERENCE
CRISIS AND EMERGENCY SITUATIONS MANAGEMENT
– THEORY AND PRACTICE**

FOREWORD

The goal of the First International Scientific and Academic Conference “Managing Crises and Emergency Situations – Theory and Practice” is to actuate and consolidate scientific knowledge and researchers’ results regarding crises and emergency situations in our country and the region. The complexity of this problem is in the swift changes, sudden events with catastrophic consequences for people and material goods.

The results that the participants of the Conference will reach are going to be useful during the process of reaching most objective decisions that will ensure more efficient prevention and protection in the times of need.

The participants are going to have an opportunity to attend keynote speeches by eminent professors and experts in the area of crisis and emergency situations.

The official language of the Conference will be English which provides it an international status, in addition to regional one.

All papers accepted based on positive reviews are printed in the Proceedings in English with ISBN and CIP data. The papers in participants’ native languages are published electronically with ISBN and CIP data and presented to the participants of the Conference.

After the reviews, a total of 27 papers have been included in the printed version of the Proceedings and 30 in its electronic version.

The authors of selected papers come from five different countries and there are eleven of them in total, while some appear on more than one paper.

The papers have been classified into four sections of the Conference.

A number of scholars helped organize the Conference, for which I am, on behalf of the Programme Board, more than thankful. We also thank the Ministry of Interior and the Sector for Emergency Management, the Faculty of Security Studies as well as many sponsors – the friends of the Conference – for their wholehearted support and indispensable help.

Finally, we hope that the next Conference will be even more successful.

The Head of the International Programme Board
Prof. Branko Babić, PhD



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IMPRESSUM

Editorial:

Branko Babic, PhD, National Association for Security, Crisis and Emergency Situations

– Secure Serbia

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Publisher:

Kurjak Copy

Vranje

For the publisher:

Branko Babic, PhD

Proofreading

Design:

Branko Babic, PhD

Nenad komazec, MSc

Edition:

100 copies

Note

The authors opinions expressed in this book do not necessary reflect the views of the institution in which they are employed.

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HUMAN RESOURCE CHALLENGES IN FIRE SERVICES AS AN ISSUE OF PUBLIC SAFETY

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Abstract: Fire departments and fire-rescue units play a vital role in the public safety of every country. However, there is an evident lack of research in the field of human resource management in fire services, even though the job of a firefighter-rescuer is one of the riskiest and the most challenging professions worldwide. There is a huge gap between the challenges faced by fire services and the current level of their performance. The significance of functions of human resource management for the performance of any organization opens up a number of issues of human resource management in fire services. Based on the analysis of relevant literature and legal and normative sources, the authors of this paper have identified key challenges of human resource management in fire departments and pointed out some of the directions toward their solution. Undeniably, the list of challenges is neither final nor exhaustive; it is rather a call for action to undertake novel research opportunities in this field.

Keywords: Human resource management, fire department, fire and rescue units

1. INTRODUCTION

Human resource management, as a management function and business philosophy, but also as a scientific and teaching discipline, has been intensively developed during the last few decades. However, the term "human resources" is still the subject of critical observations by the respective authors. According to critics' opinions, people and their potentials should not be identified with the material and other resources of the organization, since this is associated with outdated models of governance and management. On the other hand, HR supporters believe that it is precisely this term that promotes people and their role in the organization and that it implies "overall human capital in an organization: the available knowledge and experience, the usable capacities and skills, possible ideas and creations, the level of motivation and interest in the achievement of organizational goals, etc." [10]

The analysis of relevant sources indicates many definitions of human resource management. According to Desler, human resource management refers to the policies and activities in the performance of management tasks in the field of human resources, especially in terms of acquiring, training, evaluation, compensation in safe and fair environment for company employees [4]. Harris believes that this term implies programmes, policies and procedures for workforce management within companies [6]. Noe also states that human resource management (HRM) refers to the policies, practices and systems that influence employees' behavior, attitudes, and performance [16].

The researchers interested in human resources management have spent a lot of time and energy trying to understand exactly in what way and under what circumstances different investments in HRM improve the efficiency of employees and organizations. Yongmei, Combs, Ketchen and Ireland conducted a meta-analysis of dozens studies and based on data from more than 19,000 organizations, they concluded that human resources

management have significant implications on the efficiency and performance of the organization [24]. The authors unequivocally agree on the issue of the responsibility of human resource management for the human dimension of the organization [5]. The purpose of the human resource management is to improve employees' performances in strategic, ethical and socially responsible manner.

The responsibilities and activities of HR practitioners vary depending on the size, location, or purpose of the company [11]. The field of human resources includes many specialties and functions, such as: Work Analysis and Design, Human Resources Planning, Recruiting, Employee Selection, Training and development, Compensation, Performance management, Employee relations, Employee Performance Management, Performance Measurement, Employees Health and Safety, etc. [1]. Competent human resource management can help insure that all employees are treated fairly and that the organization is complying with applicable laws. Kramer says that "human resource management involves all management decisions and practices that directly affect or influence the people – or human resources – who work for the organization" [9]. Therefore, proper management and attention to the needs of personnel usually creates productive and skilled workforce.

Many organizations are heavily reliant upon internal human resources department or the employees in charge of managing human capital. The larger and more developed organizations, this unit is separated from the other parts of the organization and mainly organized as human resource department ¹ (this department can be divided into several departments that are performing the same or related activities depending on the method of their grouping). In smaller organizations, these services are often nonexistent and there is usually one person in charge of human resource management. Human resources department is by its nature a non-profit and it is considered as a center of costs, like other sectors within the organization (department of finance and accounting, general and legal affairs, and others)². World trends show that the allocations for human resources are increasing on an annual basis, which explicitly indicates the growing importance of HRM function.

In the majority of Serbian organizations, HRM function has neither been sufficiently developed nor has it been known by that name. Most often, it is recognized as "personnel function" which includes the activities such as: announcing vacations for the recruitment of candidates, keeping employees' records, monitoring the law enforcement in the area of labour and employment relations, scheduling the use of annual leave, keeping records of employees' presence at work, organizing specific training programmes for specific groups of employees, and similar. Planning, work analysis, selection of candidates, rewards, performance assessment, staff development and other important areas of HRM are largely ignored [12].

Under the influence of constant changes in the economic and social environment, and a range of safety challenges and threats in the living and working environment as well, those involved in safety, crisis and emergency response are faced with the increasingly complex tasks when it comes to the safety of people, property, natural and material goods. Firefighters or fire and rescue units play a vital role in public safety of every country. A successful fire and rescue service must work 24 hours a day to keep an area (people, industry, property) safe from fires, flood, earthquakes and other emergencies.

¹ Human resource department is governed by HR Manager who cooperates with other managers within the organization with the aim to perform HR duties more efficiently.

² The annual budget for HR department is planned at the end of each financial year.

The tragic events of emergencies such as World Trade Center attack, Hurricane Katrina, The Fukushima Nuclear Accident, etc. have heightened public and corporate awareness of the importance and responsibilities of fire and services. As responsibilities of the fire department grow, the importance and the position of the HRM function increases as well. In fact, all operations and activities of HRM, starting from the job analysis, planning, recruitment and selection, training and development of employees, etc. can be perceived as directly related to this service, successful response to crisis and emergency management, and security in general. The most relevant HR functions are the following ones: recruitment and selection (the practice of selecting new people “through a connection in common” is slowly dying, since the qualified candidates who are open to learning and training are becoming a key resource), performance assessment of employees, creating a reward system with a greater motivational potential in line with good practices of successful world services, and education and development of human resources in this area.

The role of human resources in disaster and operations of fire fighting must be considered in a comprehensive and analytical manner [17]. The key to accomplishing these corporate objectives begins and ends with excellent “human capital” [1]. It might be a difficult task for fire departments who have not invested in human resources programmes.

2. FIRE SERVICE AND HUMAN RESOURCES

The literature review shows that the research relating specifically to human resource management in the fire service is rather limited. Firefighting is a tough, complex and responsible business, and firefighters - more than most other professionals - need to possess a multitude of physical and motor skills and talents, not to mention the personal character necessary to represent their department and profession with dignity. The activities of fire and rescue units are aimed not only at firefighting and rehabilitation of the consequences after the explosion, but also at rescuing the citizens and their property and other interventions to improve safety of people, natural and material goods.

Beebe, Carter, Kastros, Kramer, Messmer and Bogardus, Smith, Sweeney and others show that human resource management functions and responsibilities at fire services are usually split between numerous individuals since they are not assigned as primary duties. HR functions are generally performed as time allows or when a crisis happens, and personnel in charge of these tasks usually do not have specialized training in complex HRM issues. They rather rely on just-in-time answers provided by outside experts to answer simple HR related questions. Beebe claims that, Fire Department Officers or Fire Captains, Fire Chiefs, Assistant/Deputy Fire Chiefs and especially senior ranked officers play an important role in implementing personnel policies [1].

How a fire department manages its HR needs is significantly influenced by whether it is a professional fire department, volunteer or industrial fire department. Departments that are part of a government often have access to the city's or ministry's human resource department which may be staffed by specialists with specialized training and education in human resources. Volunteer fire departments are providing the majority of European, US, Canadian and Australian protection services. Beebe and Kramer point that in a small volunteer departments, which employ on-call firefighters who may have other

occupations when not engaged in occasional firefighting, the Fire Chief may perform all of the human resource management functions [1], [9].

Carter and Rausch [3] state: “The goals of the fire service personnel management function are to ensure that an adequate staff exists for the emergency prevention and emergency response needs of the community and to create and maintain a work environment in which all members of the department receive fair and equitable tangible rewards for their efforts, in which vacancies are filled with highly qualified candidates, and in which human resource policies and practices ensure a satisfying work climate for all members of the department”.

Firefighting services may be professional and voluntary. In the Republic of Serbia, professional fire services are Fire and Rescue Units of the Ministry of Interior, The Ministry of Defence Fire Service and Fire Units of the Serbian Army, as well as the fire departments of local government and the fire departments of legal entities classified in the first category of fire. Ministry of Interior supervises the fire brigades, except the firefighting units of the Ministry of Defence and the Serbian Army [23].

Professional fire department in the Republic of Serbia consists of fire-rescue units organized into formations (brigade, battalion, troop (company), platoon, increased department, department) at 165 locations within the Ministry of Interior, and 64 industrial fire brigades [20]. Volunteer fire brigades are deployed at different locations over the entire territory of the Republic of Serbia, and within their competences, they educate the citizens on fire protection.

Human resources in fire-rescue units are governed by Human Resources and Joint Affairs Department of the Ministry of Interior of the Republic of Serbia, Directorate for Fire and Rescue Units³. The analysis of the current situation of human resources in the firefighting units indicates that the number of firefighters-rescuers is below the European standards (ne full-time firefighter per 1,000 residents),⁴ and that fire and rescue units do not employ the adequate number of professionally and psychophysically qualified human resources for performing safety jobs (including the involvement of persons with disabilities); there is an obvious mismatch between the job descriptions in accordance with the requirements of the job; the employees operate with improper and outdated equipment or vehicles which do not cover the territory of the Republic of Serbia [20]. Fire officers receive little HR related training, and recruitment and retention is coordinated by chiefs who rarely have time for those activities.

National Strategy for Protection and Rescue in Emergencies [13] states that the shortcomings of the existing Serbian safety and protection system are among others: inadequate professional qualifications and technological discipline of the available human resources, the lack of specialized personnel, insufficient training of professional staff, and the lack of education in the field of human resources. One of the goals is to improve the professional status of fire and rescue services, which can be achieved by additional trainings and development of human resources in this area. Fire officers are

³ The rights and the obligations of the members of fire and rescue units of the Ministry in terms of employment status are regulated by the rules for all the employees in the Ministry of Interior, the Republic of Serbia. The organization, operation, conduct during the execution of the tasks related to protection and rescue as well as the order in the brigade, are defined by the Minister [23]. The rights, duties and responsibilities of the members of the Fire Brigades within the Ministry of Defence and the Serbian Army are regulated by the regulations on defence and the Serbian Army. The rights, duties and responsibilities of firefighters at local governments are regulated by the labour relations in the Local Government [23].

⁴ The number of employees should be proportional to the number of interventions and the territory they protect, as well as the number of residents.

often trained and drilled in fire ground strategy and tactics, but their lack the education in employee relation, development of motivation and internal and external communications. Chief fire officers often set the tone for behavior in the firehouse. This person is usually responsible for assessing the performance of employees, awards, incentives (except in the case of fire service medals which are awarded on the basis of the Service Medals Regulation).

Firefighting Association of Serbia is an organization which gathers volunteer firefighters on the territory of the Republic of Serbia, while professional firefighters are gathered in Firefighters Trade Union of Serbia. These two organizations are in charge of organizing professional education and trainings.

3. CHALLENGES OF HUMAN RESOURCE MANAGEMENT

Fire services usually integrate human resource components such as constant professional trainings, career development/ career ladders, higher ranks, rewarding, employment security, interesting job, love towards the uniform, into their business model; however, these components are often stand-alone and not integrated into the larger organizational goals. Today's fire services need strong and effective leadership. Chief officers usually have little to no in-house training for leadership and fostering employee development, to meet the challenges of their ever-increasing responsibilities. According to Kastros, the chain of command deteriorates, as well as many other traditional fire service values such as integrity, honor, duty, and service [8]. We have a giant gap between the challenges we face and the current level of Performance. Fire chiefs who are generally leaders should realize the importance of the ability to acquire, develop, retain, and motivate productive workers. Human resource challenges that remain constant for a fire fighting department managers will be elaborated in the lines to follow.

3.1. Challenge one: Recruitment and selection

Firefighters tackle various emergency situations where their problem solving skills and initiative become vital to resolve issues quickly and calmly. A sensitive approach is required when dealing with members of the public, who may be distressed and confused. Today's firefighters also work closely with the community to increase their level of awareness and to help prevent incidents from occurring in the first place. Being able to communicate effectively to schools, community groups, voluntary organizations and others is important, as well as treating people with dignity and respect regardless of their background or culture [25].

The role of the firefighter is continually changing as new techniques and equipment are being introduced. Moreover, firefighters are expected to undertake a continuous training programme to maintain their competence levels. To meet human capital requirements, those in charge of HR in fire services must understand the core competencies of the candidate in terms of their health, psychological, basic motor status ⁵ and other skills necessary to perform firefighting job. Firefighters' recruitment process involves:

⁵ By checking the basic motor status the following issues are estimated: explosive hand power (the number of push-ups in 10 seconds); speed-endurance of flexor fuselage (raising troops for a period of 30 seconds); explosive leg power (long jump); aerobic potential of the organism (The Cooper 12 minute run test); assessment of motor potential (three-ball dribbling drills).

obligatory physical, mental and health testing (the state of the locomotor apparatus, evaluation of functioning in vision and hearing, the absence of chronic diseases and anomalies, certain anthropometric measures, psychological status check⁶, etc.);

background checks (the absence of security impediments for hiring);

drug and alcohol testing;

personal attributes such as confidence, resilience, and adaptability;

the ability to communicate effectively and integrate easily, determining *moral integrity*;

the ability to perform job duties under high stress situations, *adaptability*, etc.

The fire department's primary recruitment concern is to hire people who will always represent themselves, their department and their profession well. Firefighting is a blue collar profession like no other, and firefighters need to specialize in many different areas [22].

In Serbia, the problems of recruiting firefighters-rescuers are very emphasized. In addition to the lack of human resources in fire rescue units (there is a need for additional 3,000 firefighters-rescuers), there are problems related to selection of candidates. Sometimes, the applicants do not pass the required physical and psychological tests, and fire brigade is obliged to hire a person who might be afraid of heights, might have a fear of indoor space or be above the age limit recommended for such a demanding job [28]. In the past, the job was used to be offered to the candidates of older age, and with the place of residence 50 kilometers from their place of work. Therefore, the problems of clearly defined criteria and conditions for the reception of firefighters and professional, objective and professional recruitment and selection of candidates for the jobs firefighter-rescuers require special attention in order to hire the right people in this the sphere of the labour and activities.

3.2. Challenge two: Retention

Hiring employees is just a start in creating a strong work force. The next challenge of HR and management board is to keep the proper employee. Good retention programmes focus on all aspects of the employment experience. The ability of an organization to retain its employees in fire fighting sector is best exemplified in the case of US fire services. The US fire and rescue services are divided between volunteer fire companies and the government fire departments. The term "volunteer" (which means on-call firefighters who may have other occupations when not engaged in occasional firefighting) contrasts with career firefighters who are fully compensated for their services. The career fire service in America is comprised of approximately 350,000 fire fighters whereas the volunteer fire service numbers over 800,000 [26]. A challenge for fire chief is to consider the reasons why firefighters decide to resign from their departments. The study by Smith found that the participants usually join volunteer departments because of a desire to serve their communities and help people and because

⁶ Assessing psychological status includes the use of verified battery of psychodiagnostic instruments (tests) which determine: intelligence, moral integrity, disintegration of regulatory functions, neuroticism, competence, skills. The following dimensions should be taken into account in psychological testing:

- 1) extraversion, activity, sociability
- 2) openness, curiosity
- 3) impulsivity, unrestraint
- 4) friendly attitude, indulgence

they enjoy the relationships on their departments. On the other hand, the participants considered resigning from their departments because of interpersonal conflicts within their departments and because of concerns about not meeting their departments' minimum response and training requirements.

Retaining experienced and qualified firefighters is a task which requires recruitment and retention efforts. Unfortunately, most fire departments recruit to fill the position of the “do-it-all firefighter”. The failure to retain key staff can create high costs of searching for new candidates for the vacant position and considerable waste of time. Some of the tactics how to retain employees can involve:

fostering and investing into employee professional development,
promotion to higher ranked positions,
creating open communication between the employees and management,
using incentives to keep workers motivated,
rewards, recognitions and appraisal for a well performed job,
hiring a human-resources professional, etc.

3.3. Challenge three: Motivation

In his research, Sweeney discovered that some of the reasons for the lack of motivation might be: lack of emergency incidents or firefighting events, incompetent and poor leadership, time demands of fire company, missed promotional opportunities. Motivation to save human lives is not enough. Understanding what motivates firefighters can help us understand why firefighters do what they do. Skillful company officers recognize the needs of their firefighters, but often do not try to change them. It is essential that those in charge of HR clearly communicate their expectations, or the kinds of behavior they desire of firefighters; define the expected performance in fairly specific terms that are observable and measurable [18]. A satisfied employee knows what is expected of him/her, and leaders must keep in mind the different needs and expectations of firefighters.

Firefighters who are motivated primarily by money are usually not the best option for a professional services position. Successful firefighters tend to be motivated by performing high professional level tasks for the well-being of the community. They work closely in a good team and are rewarded both financially and in terms of professional recognition, the most important being rewards, recognitions and appraisal that increase the sense of personal values and self-sufficiency [1]. To maintain a positive work environment, Sweeney suggests some of the popular programs to increase motivation in fire departments, such as:

special awards for dedication, special merits, the development of the fire service,
recognition and praise,
financial incentives,
promotional opportunities,
length of service awards,
award dinners and travels,
social activities such as firefighting competition that raise the competitive spirit, morale and general health and fitness,
lifelong educational opportunities and development,
additional insurance,
emblazoned clothing and other methods of promotion for fire officers, etc.

The analysis of the literature dealing with human resource management points to a number of studies which have confirmed that care for employees is a strong motivational factor that significantly affects the efficiency and engagement of employees. Firefighting job is one of the riskiest, which is evidenced by the number of firefighters killed in the fire fighting and rescue of endangered persons, animals or property. Occupational safety and health of employees in the fire brigades in the Republic of Serbia requires the engagement of a special person to take care of these problems.⁷ If we take into account the problems of inadequate equipment, another problem emerges and that is equipping firefighters with high quality protection equipment. The lack of such equipment reduces motivation of firefighters to engage in a serious fight with fire, and the imperative is personal safety only [7].

3.4. Challenge four: Trainings

Firefighters receive fire science training programmes at various levels of formal or informal education, depending on the country they live and work in: formal high school, college or sometimes university education for career firefighting, or training academies at their local fire departments [14]. Being a firefighter requires a unique set of knowledge, skills and physical abilities- stamina, strength, endurance, motor skills, excellence in technical problem solving, power to perform ones best in physically and mentally demanding situations.

Specialty on-the-job training usually includes:

Knowing the rules and organization of fire protection

- Firefighting techniques –fire prevention, firefighting, usage of personal protective material, basics tactics of burning and extinguishing
- Rescue techniques
- Practical drills with equipment
- Handling hazardous materials control;
- First aid, cardiopulmonary resuscitation (CPR), etc.

According to [9], training in personnel management is very often overlooked since leaders in fire services focus on emergency management skills. On the other hand, studying human resource management in fire services, Kramer thinks that the key to success and the money is well spent when it provides in-house, local, distant, or online training for fire officers. What firefighters usually lack is inadequate communication between staff members that can have a negative impact on the safety of emergency personnel and may contribute to injuries or deaths of firefighters, rescue workers and civilians. Another problem may arise from interpersonal relationships, since firefighters have different relationships with different types of people. Clear, intelligent, courteous and open communication is essential for the atmosphere within the firehouse, on the fire ground and when interacting with the public, whereas inadequate communication often leads to conflicts.

Teamwork is specific to firefighters. According to [11], team is a group of people characterized by a sense of belonging, a sense of community, cooperation and striving towards a common goal. Firefighters rely on each others in every situation, and integrity and trust within the crew is essential. In order for the team to function optimally each member must also trust his/her colleagues, and understand his/her role and roles of every

⁷ In most countries this job done by safety and health officers. In our country, this job is tacitly forwarded to the managers who are usually overburdened with other duties.

other team member. The challenge in human resource management is organizing and encouraging employees to take courses in "soft skills" (skills that are related to the personal development of the individual) that can contribute to better and more efficient work of the fire service. The lack of education in the field of human resources can be overcome by a variety of trainings [9], [3]:

Decision-making techniques (group decision-making)

Interpersonal skills

Developing excellent communication skills (with civilians, fellow employees and management)

Management skills (effective leadership)

Team-building techniques

Problem solving skills and critical thinking

Stress management (relief from anxiety /fear, stress)

Negotiation skills

Training for persons in charge of human resources management - HR tools - selection and recruitment techniques

Techniques for improving employee motivation

Assertiveness training (mastering communication skills, improving self-esteem and self-confidence, conflict resolution)

Mobbing prevention and protection from mobbing, etc.

In Serbia, the Ministry of Internal Affairs has a primary role in building the capacity and potential for members of fire and rescue units as subjects of national security. Type, the programme, scope and terms of special training in the field of fire protection are regulated by the Rules of the professional examination in the field of Fire Protection ("Official Gazette", No. 92/2010, 11/2011). Of course, special attention is given to the issues of pedagogical-andragogical preparedness of staff in this area [15].

World standards of operation of fire and rescue services require quality training and education, which is carried out in specially equipped training centers. Training at the National Training Centre of the Ministry of Internal Affairs and regional centers aims to improve the knowledge and skills of members of the fire and rescue units to operate in emergency situations.

3.5. Challenge five: Occupational safety and health

We have already said that the job of a firefighter is ranked among the most dangerous jobs. Of course, the risk is negligible in standby mode or that is during their stay in a firehouse. However, an alert/siren activates firefighters and the risk of injury increases significantly. In fact, from the moment they enter the fire truck, all the activities they perform are considered extremely difficult and dangerous. Arriving at the place of fire, earthquake or any other disaster, the risk of injury goes into a zone of greatest risk.

During their work, firefighters are exposed to various dangers and hazards: work at height, effort and physical stress, harmful effects of radiation (IR and UV radiation), toxic and poisonous chemical substances, underwater work, mechanical hazards, etc. The stress and trauma experienced during the evacuation and rescue of endangered persons, especially children and the elderly, certainly have consequences on firefighters' health.

Since occupational safety and health is an important activity of human resource management, this challenge should be given special attention. The identification of risks

and hazards and risk analysis for this complex job, reducing and maintaining the level of risk which primarily involves health monitoring at reasonable intervals, providing appropriate equipment / devices that can monitor firefighters' health parameters inside the fire-affected building, and other equipment that will increase occupational safety, engaging an occupational health and safety expert who will take care about OHS issues in firefighting, providing psychological help to firefighters after stressful interventions, etc., are just some of the activities that require serious consideration and resolution in the future.

3.6. Challenge six: Commitment

Since firefighters have grown into “emergency response specialists”, they must meet a greater number of mandatory qualifications and recertification. It is, therefore, essential for them to take pride in their commitment and accomplishments, to be dedicated to what they do, never settle for mediocrity within themselves and strive for excellence at all times regardless of their task.

Commitment among firefighters is significant soft skill that saves human lives. “When an organized team with a purpose commits itself to a cause greater than any one person their collective willistl is not easily broken, like the sticks in a tight bundle that are all headed in one direction” [27]. Joy and happiness in life are not found in "I and Me" but in caring for, supporting, and being of service to others. Understanding and compassion means that firefighters should always think of others' needs and support and service to others. Those who are not dedicated to their jobs, or who lack passion or work ethic quickly could easily fall behind and can become a hazard to themselves and their crew.

4. CONCLUSION

The complexity and gravity of various interventions performed by fire and rescue units indicate that their readiness and capacity for prompt and appropriate response is the primary assumption of success in protecting and rescuing people and property, especially in cases of large-scale firefighting and rehabilitation. Numerous risks and challenges related to the work and activities of fire and rescue unit members require a serious and thorough approach to human resource management in fire services.

The way fire chiefs, captains and heads of fire rescue units manage and treat the firefighters in their departments may significantly affect the quality of their work and performance in general. At the same time, is not required to have certified and specialized managers (heads of sectors captains and others.) for performing HRM activities be, it is only important they are able to organize additional trainings and employee development in this area. The tasks of fire chief is to maintain healthy and positive work environment where there is good communication and healthy interpersonal relationships, an atmosphere in which all members of the department receive fair and equitable tangible rewards for their efforts, and are motivated and have the opportunity for continuous education and training.

The basic assumption of human resource management in fire brigades is the recruitment and selection of the right candidates who have the required psychophysical, motor and other abilities, knowledge and skills to respond to crisis and emergencies. Staffing and technical equipment, professional development, training and development of firefighters,

motivation, occupational health and safety are just some of the challenges that should be devoted special attention in terms of human resource management in the future.

ACKNOWLEDGEMENT

This paper is part of the research carried out within the project III 44006 and the project 42006, funded by the Ministry of Education, Science and Technological Development of Republic of Serbia.

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FLEXIBLE MODULAR MILITARY UNITS FOR MISSIONS IN EMERGENCY SITUATIONS

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Abstract: The paper discusses a wider use of the military in the concepts of defense, primarily on fulfilling the tasks of civil protection in emergency situations. Starting from the requirements of the internal and external interoperability, a concept of flexible organization of military units that would meet these requirements is analyzed. Mixed modular formation of military units would ensure the optimum use of military capacity in all three planned missions of the Serbian Army, and would be especially appropriate for use in emergency situations. Featured is a framework composition of a modular unit that could respond to the needs of joint participation of civilian and military structures in crises caused by natural disasters, environmental disasters and other large-scale national and regional causes.

Keywords: civil defense, the involvement of the army, modular concept, military formation, emergency situation

1. INTRODUCTION - THE CHARACTER OF FUTURE ASSIGNMENTS AND THE CAPACITY OF THE NATIONAL ARMED FORCES

Two different but balanced principles of general military organization existence on the world stage have never been as prominent as in the present time. They are: military organization designed to *campaign warfare* and *expedition activity*.

The former are designed with the aim to protect the national territory as well as to be used in a variety of emergency operations.

The latter are designed with the aim to promptly and quickly intervene in the given zone of responsibility in an international area. Such forces ought to be sustainable for a sufficiently long period of time in a selected territory in order to protect the national but also joint multinational or international interest.

Regardless of how they are designed, the forces of small and medium-sized countries generally have roles that are defined by the constitution and usually formulated as:

- Combat engagement to protect the national territory, but also to participate in international operations,
- Peacekeeping engagement, combined with other combat and non-combat operations in actions in both domestic and international, foreign, territory, and
- Engagement in emergency situations and civil protection missions, in domestic or, if necessary and upon the decision of the state bodies, international regional territory.[8]

From the organizational and technological viewpoint and by the requirements of the design of military units all three stated roles of the armed forces are, in fact, contradictory, but in accordance with the needs of the concept of new military roles, they must be integrated when military organization and military technology are in question. To carry out the integration for such tasks the following general capabilities of military composition should be met: interoperability and national operability (intraoperability).

Interoperability is a term of more recent date and is the ability of taking part in international defense management. It is used as a doctrinal element that denotes the ability of international cooperation in joint operations.

National operability (intraoperability) represents the ability of military forces to form a good compatibility with civil factors within the overall national security forces, through their formations in joint operations, then with its own formations as well as with civil society institutions registered for specific or specialist activities. It is this ability that is the subject of further analysis in this paper.

If the estimation is made of national military forces engagement in the future, we can say that “they will be significantly less engaged in combat, and much more in civil, international and domestic non-combat activities. This includes, among others, tasks in emergencies to help the activities of civil protection [10] but also crisis management, as new joint tasks of the army and the civil society. They must be planed mainly as activities parallel to the low-intensity combat operations as possible joint roles of the military and civilian structures.

Such an approach to designing tasks of military units is different from earlier commitments in terms of their optimal combat integration and diverts their traditional way of organizing focused on purely military capacity and technology to new, different, civil-military requirements that are mainly the result of compromise. Such involvement of military units in the future will require the engagement of civilians as an inherent component part of existing specialized military formations. In order to execute such combined civil-military tasks the engagement of balanced civil-military both combat and non-combat military units is required. A similar requirement exists as the idea of the capacity of European combat units. On the one side, European forces should be prepared for performing the tasks of preserving peace and stability in certain critical regions but, on the other, to be designed with the capacity for the purpose of managing crises.[1] It is especially important that they have the ability to successfully interact with various civil sub participants in the territory that sometimes are of quite opposite target and organization models and orientations.

The commitment of the state to army participation in joint military forces, i.e. to be interoperable in a model of multinational collective defense [3] calls for the formation of operational and technical requirements that are integrated into their organizational structure. At the very beginning, this means that the following should be harmonized: the use of common complementary command and information systems well as protection technologies and logistical support, in order to achieve an integrated synergistic effect of preparation and execution of operational tasks. With this approach, issues of engagement become reduced to the training of personnel and the formation of collective operational readiness for the required mission.

The necessity of the same functional requirements also applies to intraoperable models of internal national institutions and forces in the field of emergency situations i.e. civil defense forces. The use of unified equipment in emergency situations compatible with military equipment requires approximately the same training for the units equipped with

the same or similar equipment, regardless of the organizational form in which it is distributed. Difference may occur at higher operating, integration levels, rather than at the level of basic units and their users.

Therefore, new joint combat military and peacetime civil defense unit capacity of intraoperable successful and efficient integration lies particularly in the technological equipping, but also in the joint training for the tasks in emergency situations. The technological level has to be one of the main prerequisites for effective initial pairing forces. This has to be a starting point for consideration of how to optimally integrate and operate a system with a common *inter* and *intra* operable capacity in order to be engaged at both international and national level.[2]

2. DIVERGENT REQUIREMENTS FOR FUTURE MILITARY CAPACITY

The innovative approach in creating new forms of combat teams and groups aimed at new unpredictable and predictable challenges and threats is also contained in US military documents.[10] It is stated that this is conditional and necessary for implementation in terms of the realization of an optimal combined readiness of military units for two basic tasks. The first is the capacity and readiness for operations of combat engagement, and the other, the ability to and preparedness for stability and support of the civil population and society operations. The key question raised in this paper that can be related to the ability of giving support to civil population as the other stated aspect of the engagement of the military is: which are the common responsibilities of civil protection forces in which the military should be prepared to participate actively. They are mainly the following risks and threats:

- the risks of tectonic and natural disasters
- the risk of surface and underground warehouse and installation explosions
- the risk of new technologies and products
- the risk of environmental and epidemic disasters etc.

Within the preparation for the mentioned risks and threats, the engagement and inclusion of all branches and corps of the military should include an appropriate level of preparedness for the following stages: preventive action, engagement and response during the process, stabilizing activities in the aftermath. Such engagements require the expansion and reorganization of functions of both military technology and military combat organization. This causes a different model of organization of military capacities in combined units with differently armed and unarmed civil participants, such as civil protection, gendarmerie, police and special forces that will share a common responsibility in defense, peacekeeping operations and tasks regarding the security risks of civil society.

One of also important, contemporary features of the military with regards to the new capabilities, necessary for the design of military unit structure, and in connection with the requirements for interoperability, is the possibility of not only to participate but also to organize the acceptance of multinational support particularly in the tasks of civil protection. These characteristics have a much greater significance than previously required a conventional tactical military capabilities. The mentioned issues are largely based on the concept of flexible modular unit organization and, in particular, on the concept of applying different technologies both in combat and in non-combat missions.

European Initiative for interstate integration of EU member states, "*Pooling and Sharing*" is intended to increase the ability of the armed forces of small countries as part of preventive security strategy.[6] According to this strategy the key common interest for EU Member States and candidate countries is to accept a part of the burden for future military integration. This presumes the development of new military capabilities, such as communication, maintenance, transport, or civil-military interoperability, but also the risk that they become more important than the function of combat tasks of national military units in small countries. Modern political and economic circumstances prevent the majority of small and medium-sized countries from having the military capacity for an entire spectrum of conventional conflicts and new civil-military tasks. This is mainly due to budgetary issues that burden more modest national economies. It is difficult to discern the optimal conditions required to allow a completely open interstate cooperation in the EU. This cooperation is built on the basis of some general approaches such as clusters formed according to the model of regional geographic area, earlier existing models of political cooperation, cultural and industrial relations, and other relations that may be considered as compatible.

EU concept of "*Pooling and Sharing*", would be a good basis for integration if it represented a synthesis of so-called intensive national and extensive international principle.[4] According to this model, the intensive part of aggregation could be, preparing and equipping forces, achieved in the country and the extensive part could be partially realized through a joint international training and exercises to achieve an adequate level of interoperability. This could be a typical training concept based on the available, already existing abilities of the participants. This seems feasible from a political point of view, however, it lacks a sufficiently large number of wider interests to be accepted by the EU countries. The concept of improving the efficiency of cooperation in the field of civil protection through the examples of common use and acquisition of modern unified technology and equipment for protection could provide a wider interest of the states.

3. MODULAR CONCEPTS OF CIVIL-MILITARY UNITS

In order to achieve the concept of joint interoperability and intra operability, a mixed military and civilian composition it is necessary that national planning military formations predict a part of the modular structure of the organization. Successfully planned national strategies covering various requirements for combat and non-combat military units of the organization (e.g., medium-sized, reinforced company) internal organization of easily replaceable combat teams that can be equipped with a variable combat and non-combat elements and technologies.

Modular concept elements contain principles that require designing modules and appropriate force structure individually for each operation. The concept of modular structure of the military at all levels mainly means that the military is self-sufficient and able to operate in traditional formations, as well as divided in combat groups and teams.[5] This is a key organizational capability to meeting the new compromise requirements for designing modern military units.[9] General requirements of these battle groups and teams for ground forces are outlined in recommendations but can be variable

for specifically requested operations and missions, including domestic operations in emergencies in joint action with the other forces of national defense.

Modular elements of a military unit can be integrated around a modern headquarters-command structure capable to accept platoons and small teams of different participants equipped with modern technology, which is at the disposal of the army, and including free organized groups of civilians, private expert security etc.

Platoons of combat and non-combat teams would participate on the basis of principle of modular replacement at all levels of a basic modular unit in accordance with the operational requirements of a joint mission. Such a unit should ensure optimal performance for different range of risks and threats through all afore mentioned stages of participation in emergency situations. Such a unit might be able to use a variety of integrated civil and dual military defense technology.

By these changes, a synergic unit effect is achieved as a new quality of the projected military capacity, which is also listed and recommended in the literature of the EU.

In a military sense, this concept can be used for evaluation of the of lower level military organization ability of independent action even though it is a kind of experimental capacity.

This virtual experimental team is proposed as a general organizational matrix in Figure 1 with the following six general organizational modular components [4]:

- Module 1 - command and command platoon;
- Module 2 - expert information and security module;
- Module 3 - joint civil-military planning and decision making command;
- Module 4 - military forces for indirect support;
- Module 5 - mixed civil-military logistic support forces;
- Module 6 - a group of virtual modules and teams for immediate action and engagement in emergency.

The functions of each module are explicated in the further text, and their graphically presented method of assembling is given in Fig.1. Also, the Fig.1 provides the example of an extended modular company as the possible contents of modular unit with grouped civil and military participants for use in civil protection operations. The following contents shown in the Fig.1 individually for each constituent module could be planned as tasks of the participants in this organization.

- **The first i.e. Command and Staff Module** would have three squad teams at their disposal, one for communication, one for security and one for rubble disposal and command engineering operations.

- **The second module** is information, intelligence, security and control module. This module is responsible for providing information but also for the assessment of risks and damages as well as for overall expert analyses before and during operations of unpredictable progress. The role of this module is analytical which presumes data collection and fusion. This module also has the role of network centric coordination and direct monitoring of remote deployed operational teams in real time via special communication technology and through a network of sensors. Also, this module includes fulfilling the tasks regarding linking with civilians and security structures outside the military. It is the strength of a reinforced platoon, organized into 5 to 6 interdependent expert teams, with 30-40 people in total, but according to the requirements may be larger or smaller in number of personnel.

- **The third module** is made up of military and civil staff organizational elements collected in the headquarters of the mission and decision-making joint bodies of civil protection and army. This module is associated with higher and lower joint civil and military commands and elements responsible for the tasks in emergencies. The headquarters is equipped with GIS system and a direct link with the information module but also its own team for the integration of army branches in emergency. The headquarters is responsible for decisions on the engagement of the forces for rapid response and rescue teams in case of transportation, evacuation, relocation and deployment by land roads, air and waterways, etc. This element provides the autonomy of action in operational task preparation in case of emergency. This autonomy is based on the available information capacities in real time but also by using available capacity outside its own modular unit in each planned moment. This module is the strength of a platoon also organized on the principle of expert teams, and not of army squads.

- **The fourth module** is a military domestic and/or international staff for indirect support. It can be comprised of different teams such as rescue teams, special material goods, remotely managed object, movable monitoring sensor and crew transportation teams, as well as engineering security for logistic activities, for removing obstacles on land, in water and/or air, etc. NBC medical and epidemiological protection in case of mass risks of environmental disasters and the like can also be elements in the composition of the module, but also other types of support depending on the type of operation. The module is under the direct command of civil defense units through representatives in the Joint Staff of the modular company or some other non-combat mission that is, by order of the Staff, accountable to the command module information team that conducts the indirect support in real time by monitoring via direct operational links.

- **The fifth module** is an element of logistic support that provides technical, medical, and temporary evacuation support in emergency situations. It is divided into three sub-element groups. The first is contact, and is directly involved in the mission, **the second** is close, and is usually on duty and also participates in the execution of specific tasks simultaneously with the contact, and the third is distant, background logistic element for each specific, professional, and civil volunteer logistic activity planned, and unplanned in action. The involvement of these teams is at the discretion of the joint staff, i.e. Module 3, and bears full responsibility for the entire material traffic, transportation, and other logistics and security. Risks and threats of various types, as well as their consequences, require non-standard virtual procedures in the use of material goods for which this module is accountable. Its composition is mixed and under the authority of the civil staff elements in Module 3, and the strength is up to two platoons.

- **The sixth group** of modules are elements of armed forces direct engagement in actions, together with civil defense forces for immediate action. Their modular structure is elements of direct involvement in civil protection operations. They are composed of two to three platoons subdivided in teams and/or squads. By order of the Headquarters (Module 3), it is attached to the information team (Module 2) to monitor the action in progress. The teams have the option to mix with other elements and other civil participants, but also with the armed modules of civil security forces such as special units, gendarmerie, police special elements, etc. It is a typical module for direct activity

The diagram illustrates the organizational structure of the Russian Ground Forces, organized into six main functional areas:

- 2. Data analysis and fusion command center:** This area is connected to the top-level command and intelligence units.
- 1. Command Platoon:** The top-level command unit, which oversees the entire structure.
- 3. Joint Staff:** This staff is responsible for coordinating joint military-civil operations.
- 4. INDIRECT SUPPORT:** This area includes units for distance and special non-lethal missions, as well as sustainment and combined logistic elements.
- 5. LOGISTIC SUPPORT – MIXED FORCES:** This area includes units for logistic support, traffic extended platoons, and medical help and evacuation platoons.
- 6. Civil forces for IMMEDIATE:** This area includes units for civil-military involvement and forces of direct involvement.

The chart also shows the following units and their functions:

- COMPANY commander:** BG 200 personnel and soldiers.
- INFORMATION INTELLIGENCE AND CIVIL LINKS:** squad level intelligence platoon, 2 security platoon, 3 CMC platoon.
- JOINT MILITARY-CIVIL:** STAF-squad level mixed civil platoons, command protection platoon, CIED platoon.
- Distance and special non-lethal and non-lethal combined missions:** This unit is responsible for distance and special non-lethal missions.
- SUSTAINMENT COMBINED LOGISTIC ELEMENTS:** This unit is responsible for sustainment and combined logistic elements.
- LOGISTIC SQUAD:** This unit is responsible for logistic support.
- 1. TRAFFIC EXTENDED PLATOON:** This unit is responsible for traffic extended platoons.
- 2. PLATOON MAINTENANCE:** This unit is responsible for platoon maintenance.
- 3. MEDICAL HELP AND EVACUATION PLATOON:** This unit is responsible for medical help and evacuation.
- 4. ORDNANCE PLATOON:** This unit is responsible for ordnance.

This expanded company modular team would number between 220 and 250 participants in full. This composition would be used as an interoperable military participant for directed tasks and in help missions to emergency civil protection forces. In such a synthesis, each modular element as a whole or a part of a team is replaceable in compliance with the task requirements, and may be national or international. Also, each module can be selected as a national participant in international or national integration tasks, based on the principle of interoperability.

4. CONCLUDING REMARKS AND QUALITY ASSESSMENT

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change depending on the type of mission and specific operation of participation in emergency situations.

The effectiveness of integration of a system this complex such as the extended modular company requires semi-empirical probabilistic models to assess the quality of recruited modules assembled in the concept of specialized modular teams. These concepts initially integrate people and their technologies recognized as sufficient efficiency for the formation coupling, but with the underlined significance of the role of the technologies used, as a general hypothesis about the preconditions for successful integrations.

Such modular principles of armed forces designing can be directed to the modular combat teams too, since they assume smaller or larger variations the use of combat and other technologies of various origins in other tasks of interoperable international integration. The modular combat team at company level offered in the work, with the capacity to vary the teams and modules equipped with compatible technologies, depending on the requirements of operations, is an attempt to contribute to solving the problems of a unique formation integration of military units adapted for use in civil ground missions during various emergencies.

Initial research in this paper expects the further development of the idea but also the recognition of its practical realization.

CREDITS

This work is a part of the research within the project III-47,029, funded by the Ministry of Education, Science and Technological Development of Republic of Serbia in 2015.

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SECURITY MENAGEMENT AND CRIMINAL AND INTELLIGENCE ACTIVITY IN COMBATING TAX CRIME

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Summary: Tax Evasion with their phenomenological properties as tax criminal activity, is implemented in the relations of taxpayers and the community. Tax evasion as a result of classical and organized crime, significantly reduces the influx of public funds, especially in the transition and post-conflict societies, which consequently contributes to creating a crisis situation with regard to the lawful functioning of the budgetary needs. The overall objective of the functioning of security management is to achieve and preserve the projected and / or intolerable security situation. The paper presents the results of scientific research of the impact of security management and criminal activities in the intelligence in heuristic and syllogism area in ever-increasing opposition to a tax crime.

Keywords: security management, tax evasion, public revenues, intelligence work;

1. INTRODUCTION

A distinctive form of organized crime, which motivates different small and large groups to achieve illegal profit very fast through criminal sphere, is tax evasion. There has been a small number and not enough scientific debates on the phenomenon of tax evasion and organized crime which is globally spread, and has its forms and work methods in countries in transition and post war countries. Countries in transition are facing their own issues because of their big economic and political problems, so they slowly loose step in developing and modernizing forms of safety and protective social systems, while, on the other side, growing organized crime and corruption, feed societies with political disunity, incompetency, economical poverty and lead them into state almost beyond endurance, where social differences are huge, damaging the majority. „ It is incredible that in recent years we face through various phenomena called the economics of crime.“ [4] Due to possible large illegal evasion of state revenues caused by tax evasion, direct and indirect state revenues, the problem can be seen and analysed from different views, or it can be viewed from the side of tax evasion as an event or as a consequence. It can be viewed as a scientific research, multidimensionally sublimated, since the consequences of illegal evasion of state revenues represent uncontrolled situation which objectively corrodes and affects tax system functioning of a country, but also society as a whole. Such uncontrolled situation caused by attacks on the state revenue system of the community, especially in undeveloped countries, is primarily reflected in a reduction of state revenues, which implicates less money for social purposes, health, education, pension funds, sports, and thus influences the sustainability of the community, which is reflected in the quality of life of people and individual. In such unstable conditions of the country, everything positive is becoming weaker, and social unsustainability is strengthening,

which has been measured through increasing poverty, corruption, lower business confidence, various forms of intolerance, lower respect of regulations, increasing crime, and respectively, negative elements of social capital are becoming stronger and more numerous.

From a legal aspect we can define a fiscal system of a country as a set of regulations that regulate field of public revenue and expenditure, as well as legal responsibilities of institutions which are in charge and responsible for regulation enforcement. With a term fiscal system we cover tax and budget state system. The importance of public revenue is reflected in the fact that public revenues are collected and used for financing the state, which means for financing its functioning. State revenue have had and still have different sources, so the quantity and the structure of public revenues depends on degree of development and economic power of the country, and political and economic relations prevailing in the society. When speaking about the state, public finance, revenues and expenditures, we relate to them various types of taxes. Therefore, tax is always related to the state, state functioning and achievement of economic security. Being aware or not, individuals or the society have been living in the world of taxes. Approaches to the notion of tax vary from author to author, so the definition of tax often derives from different aspects. However, regardless of these differences, most of the authors mention the same constants while defining different taxes: firstly, the state, and secondly, a general assertion that “the state does not provide direct counter-favour for taxes”. As one of the views on taxes in “Public Finance in Theory and Practice”, the authors determine the following: “Taxes and fees are charged to the private sector without any obligation of the state to the taxpayer”. [5] Therefore, taxes are collected by this assertion from the private sector, and public sector and state entities are being ignored, as well as the state which in certain conditions, especially when performing other activities except „state ones”, can be taxpayer, e.g., when renting business premises. „Economically, taxes are compulsory payments which are assessed by the institutions, and there is no economic counter favour being asked for. They are borderline case in the spectrum of public revenues where those characteristics are more or less pronounced” [2] However, this quoted view should be observed much broader, e.g., from the aspect of sustainable development and not only from the economic aspect.

The research objective of this study is multidisciplinary and covers phenomena of classical crime, organized crime and tax evasion, as well as the influence of management and security science on the above phenomena. The research objective in this study includes research in the field of security of public revenue, pointing to various types of risks and threats from illegal evasion of public revenues. Likewise, the research objective is managerial vision of security management in the field of public revenue. Hence, in this study the general view of specifics in management and security science will be elaborated, as components of the special unit of the security management, as well as their basic role and significance in criminal aspect of tax evasion discovery and organized crime. In the study there will be explained what security management and its role in prevention and disclosure of tax evasion is. The study will be focused on displaying tasks of criminal intelligence activities, ie it will be written about intelligence techniques and methods, as specific tools used in tax intelligence activities in tax security management daily activities and authorized officials of tax intelligence.

2. CONCEPT OF TAX EVASION

Tax evasion, is generally considered as avoiding, deliberately and/or through gross negligence, accurate accounting and payment of a specifically defined lower threshold of taxes, to public revenue accounts. In different countries all over the world, no matter which country we talk about, tax evasion has its definition and it is indicated as undesirable and illegal phenomenon through relevant regulations, which is being sanctioned. „Tax evasion is illegal evasion of all forms of public revenue from the impact on legal functioning of the fiscal system. Tax evasion is illegal activity which appears in a traditional criminal form, and with development of global relations in the world it takes different forms of organized crime and represents a serious crime.[3] Below, there will be explained tax evasion of indirect and direct taxes, with all the features, as modus operandi for other forms of tax avoidance, with a remark that there are no identical tax evasions, meaning that each tax evasion is a special case.

From a theoretical point of view, relying on points where there is an effect of taxes in a circular flow, it is not hard to notice that those are the places where the tax evasion is possible. That is the reason why a consideration of tax evasion from this theoretical point of view, at the beginning of discovering tax event and/or developed crime in practice, is an important starting point for the quality setting of working hypothesis and/or connecting clues for quality planning of discovering and investigating the illegal tax evasion.

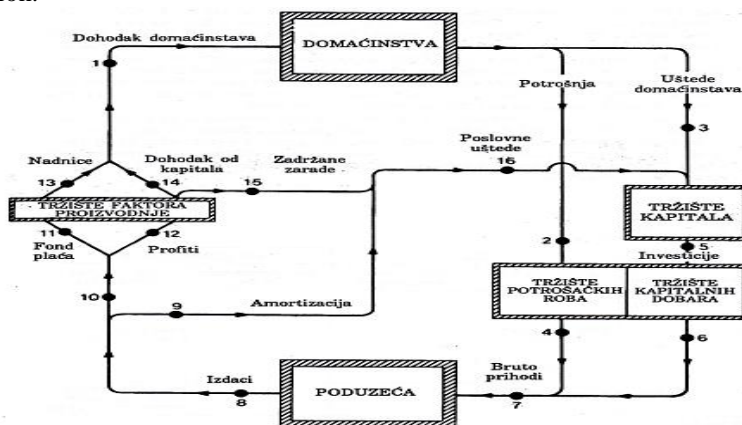


Figure 1: Points of tax effect in a circular flow

Source: Richard and Peggy Musgrave, Public Finance in Theory and Practice

Seeing tax rationally as a public revenue in democratic government, explicitly indicates that the state must constantly and strictly take into account the fairness and appropriateness of the existence of certain public revenue, and keep in mind that it is constantly being under the magnifier of tax payers through the strength of equitable fiscal distribution. The state has to create such a tax framework, that each citizen finds it important, honourable and moral to pay taxes, for which he knows that in a recursive state of collection and distribution of public revenue they contribute to the community in general, as well as to every single person. „Taxes are the most important source of revenue for a country. They represent forced payments that are not directly connected with civil service flows.”[2] Of course, if community is seen from a much broader view,

from the aspect of human sustainable development, then taxes have larger social impact and represent necessary means of public revenue for satisfying current needs of the functioning of a community. From this point of view, the state is theoretically efficient in a distribution of public revenue to the extent of how developed are the elements of social capital, which are serving to satisfy present and future social needs as a whole, as well as needs of each member of the society. These are bases of a modern, different understanding of a tax system in a system of sustainable development. From history to present modern times, the role of tax has changed to benefit a wider community, against established opinion that taxes are only forced revenues for its narrow purposes. Such a different understanding of the concept of tax, in different social systems, influences on different approaches to the phenomenon of tax evasion. „In the literature there are mentioned various factors considered key ones for tax evasion, especially evasion on income tax. Among others, the following factors stand out: (1) assumption about fairness of certain laws, (2) attitude of a taxpayer towards the state, (3) basic features (of a tax morale), (4) the severity of a sentence which can be expected after proving tax evasion, (5) how easy is a tax evasion, (6) monetary benefit which can be expected as a consequence of avoiding payment of taxes. The following function of tax evasion can be defined from the above: $PU = PU(TPU, F, P, \dots, O)$ where PU is the size of tax evasion, TPU is the size of expected savings on taxes, F is how easy the tax evasion is, P is the measure for the severity of a sentence which contains also a risk of revealing, and O are all random and immeasurable factors.” [2]

A concept of a certain criminal offense or being of a criminal offense is, in simple terms, a complete legal description of a criminal offense, which also covers tax evasion as a crime offense. The legal description of a criminal defence is unified (sublimated) as a subjective and objective feature. „Subjective feature of a criminal offence is offender’s subjective intent, which, in tax evasion, is expressed through the willingness of achieving the aim of an offender to evade tax payment. The expressed subjective intent of an offender and his willingness are primarily of a subjective nature, and therefore, represent subjective nature of a tax evasion as a crime offence. “ [3] Visible o/or tangible external behaviour, represents the feature of a criminal offence, expressed as objective feature, which is manifested through a specific act, that can be made of one or more legally defined illegal acts. „Every criminal offense directed against a specific object, against a specific good or interest that are protected by criminal law.” [6] It means that the law prescribes minimal amount of forbidden tax evasion, so indicated amount and every amount above that minimum represents potential event of possible crime offence of tax evasion, from which the state is protected by criminal law. Each avoidance of tax payment under indicated minimum limit is not a criminal offence, regardless a fact that the same criminal offence from the point of administrative law is foreseen as an illicit action. Hence, tax evasion as a criminal offence is prescribed by a criminal law where it is exactly described what is the content or a being of a criminal offence of tax evasion, as well as what are the limits of social danger.

3. CATEGORICAL-TERMINOLOGICAL APPARATUS IN CRIMINAL INTELLIGENCE WORK

Information is a kind of capital. Data is a kind of capital. Knowledge is a kind of capital. Certainly, everyone could agree with above phrases that are heard in everyday life, at work or in scientific circles. To obtain knowledge, data or information is not always an

easy and simple task. „From whatever problem or segment it starts, it has to create a whole. Only following that approach a problem can be solved appropriately. Appropriately, in this case, means to contribute optimally to the achievement of broader purpose, or to the usefulness for the system to which those and similar parts belong”[7] But, when quality information and/or data, or knowledge are obtained through intelligence activities, then those activities become a kind of intelligence capital. „Intelligence capital is, continuously and through a process, with information enriched substance for efficient and effective operation of security management. Criminal intelligence capital is knowledge about crime. Therefore, it can be concluded that intelligence capital is a value, or irreplaceable intelligence informative resource, made of potential and kinetic energy of intelligence information and data. It enables and improves creation of connective tissue of intelligence engagement, which has been used broadly, even in field of detecting and proving organized crime of tax evasion, regardless of the fact if it concerns direct and/or indirect taxes.“ [3]

Data - Intelligence data is an information, processed to an intelligence product which can be used as a specific value in the analysis of an intelligence situation. In the information age we live in, we are overwhelmed with all kinds of information. There is a need for intelligence information to be able to produce intelligence data. Information can be obtained from various sources and various levels or sides. To obtain an information it is not necessary for the source to be an expert, registered source or expert from the intelligence field, so it can be a newspaper article, internet information, publicly available information or some media source. Therefore, data is a kind of formalized representation of facts and knowledge suitable for interpretation and processing.

Information - Information is determined (initial) significance, attributed to data through rules used for their interpretation. Information in raw-unprocessed state (raw information) does not give an input always and immediately to the user, about everything needed for processing. Mainly, the relevant intelligence data is not clearly visible, it is surrounded by various details. With a technology development intelligence data becomes more perishable good which loses its usage value if not delivered at the right time. Information usually represents a raw data, which is subject to minimal processing and analysis. To become an information, data has to be assessed and processed in the process of criminal analytics.

Intelligence information – The purpose of intelligence information is to initiate and/or support the intelligence and criminal investigation, and eventual prosecution for criminal activities of certain individuals or criminal groups. Revealing or heuristic criminalistics is based on the intelligence process that starts from the criminal event and information. As a part of tax intelligence, through intelligence process the assessment of available information is done. As stated, there are different sources of information, so information about tax criminal event are being collected in various ways. Regardless the source of information, within the intelligence process it is necessary to transform the information to intelligence tax data. „Estimated information in this way gets a new meaning, and can be used as a tax data, which can contain in its intelligence code strategic, tactical, operational and analytical potential.“[3] While strategic intelligence data are suitable for long-term analysis, tactical and operational data contain information for tax event proactive and / or preventive.

Therefore, information are codes which intelligence tax authorities obtain in various ways from different sources, which „dress a certain intelligence attire” called intelligence data gathering, processed from the information, that becomes suitable for usage for

different tax purposes. Such purposes are needs of tax policy, management operational needs in tax institutions, needs of prosecutors and courts on tax matters, needs of investigators in detecting and clarifying tax events, needs of tax inspectors, enforced collection, tax assessment etc.

Thus, tax intelligence cycle is a process of managing cycle process of obtaining information, processing information and delivering information as a final product of initial information, or a process from the initially expressed need for tax data, to delivering the intelligence product or data, at the end of a cycle, to the customer or user for specific tax purposes. Therefore, within the framework of an intelligence process, the intelligence tax authority receives obtained information mostly as raw intelligence data that are being processed, checked, analysed, and, finally, transformed to a verified tax data. Information can be gathered from human-alive sources, material sources, and scientific and technical processing of objects of intelligence interest. „In the function of detecting and proving the offense of tax evasion, criminal intelligence activity is an important link that through information and / or intelligence data elaborates tax offense, to grounded suspicion in criminal process reality, but does not stop there. Criminal-intelligence activity does not stop and does not cease to operate by delivering intelligence products to a user, but it is actively incorporated in tax investigative activity, until ensuring necessary evidence about criminal activity, and sometimes until the moment of creating the prosecutorial indictment.“ [3] Intelligence activity is a complete process which does not end with a final verdict, but it has been renewing itself continuously through new criminal tax events and criminal tax offenses, in a cycle process, because the whole intelligence process has been renewing itself. Through intelligence analysis the intelligence knowledge about tax frauds and its executors is being created, central and auxiliary databases are being created in tax intelligence authorities, which are used for easier detecting of tax evasion and fraud.

4. CONCEPT AND PHASES OF A CRIMINAL INTELLIGENCE PROCESS

Information needed for creating intelligence data can come from anywhere. It has already been emphasized that information are codes obtained by intelligence tax authority in various ways from different sources, which „dress a certain intelligence attire” called intelligence data, or data processed from the information, and became suitable for usage for various tax needs. Therefore, intelligence data are information to whom specific meaning is added, so intelligence data consist from processed information elements. „The basics of criminal-intelligence and analytical process is a concept of criminal-intelligence cycle. Criminal intelligence process, the cycle can be seen as strategic, tactical or operational, depending on the specific requests, evaluation and overall circumstances. Criminal-intelligence cycle is made of the cycle of certain criminal intelligence and analytical activities and procedures which complete the entire criminal-intelligence and analytical process. "[1] In connection with the foregoing, it is clear that information collected in different ways, are then processed, used and analysed, documented and recorded in a database, and are, in the form of intelligence reports, delivered to users for their needs. Dissemination of information, and further planning and directing rounds up intelligence process, which is in a detection of tax evasion, tax crime intelligence cycle. In relation to sources of information it can be concluded that "there are three main types or kinds of sources of information, namely:

„Opened, closed and classified confidential.” Conceptually, when talking about the criminal intelligence cycle, it is clear that this is entirely planned and continuously managed intelligence process. The process starts with the identification of data needs, and in rounded final process, is evaluated by providing intelligence products to the consumer. "Consumers are different in tax events, and may be investigating tax officials, various inspections, courts, prosecutors, police and everybody else, or consumers and users to whom the data is important and / or useful." [3] „Criminal-intelligence cycle consists from the following actions and procedures:

1. setting (defining) the task,
2. data gathering,
3. data assessment,
4. data processing,
5. data integration,
6. data analysis,
7. development of conclusions,

spreading-distribution and data delivery.”[1]

One of the most important activities in the criminal - intelligence cycle is information assessment or determination of its validity. The concept of determining the credibility of information is a kind of ability to determine the important from the unimportant, and the validity of the source of information in order to achieve cost-effectiveness of further proceedings in the intelligence cycle.

Planning phase - At this stage it is planned to work in the intelligence process, for example, it is decided on the direction that the analysis will cover. Regardless of the type of intelligence process used, it is necessary to plan the work. The planning phase should include assessment of information, preliminary study, study of the problem areas, direction of the analysis, the choice of working methods, plan documentation and feedback on the plan. It is necessary to emphasize that the preliminary study, direction and choice of methods are creative processes that can best take place in the group / team.

Gathering phase - This phase focuses on gathering all the information needed to solve the task. In the phase of information gathering it is necessary to define in details the necessary information, to choose sources and develop a plan for gathering information. It is important to emphasize that the definition of the required information and selection of sources are creative processes and that 'tools' described in the phase of 'analysis' are used in this phase.

Processing phase – This phase aims to assessment, organization, study and drawing conclusions based on the information gathered, with the aim of providing recommendations or of creating basis for decision-making in order to propose measures to be taken.

Assessment phase - The intelligence process is a cycle because assessing the effects can lead to new information that will lead to new intelligence needs that could initiate the second round of the intelligence process. The assessment is the evaluation of information, which means evaluating information on reliability, accuracy, relevance and objectivity. In order to solve the task, it is necessary to better understand the information, the degree of its reality and usefulness. Hypotheses or proposed measures or information campaigns based on less reliable or inaccurate information increase the risk of deliberating wrong measures. Information assessment is an essential part of the intelligence process, so it is necessary to assess all the information. In theory, it is

emphasized that the information assessment should be made as close as possible to the source, that the evaluation is done in a uniform manner and it has to be documented.

Analysis phase - From the aspect of intelligence work, the analysis may be strategic, operational and tactical, depending on user needs. "The analysis will include in its process the entire preliminary proceedings seen from a new dimension, will measure the content of existing knowledge and intelligence through investigative process to offer such a product that can be used. The analytical investigation is not the same concept as a classic or contemporary investigation in criminal proceedings, conducted in accordance with the provisions of the criminal proceedings, regardless of the similarity in understanding the meaning of the investigation, because it is in the domain of heuristic intelligence cycle. In a domain of drafting scenarios in criminal offense of tax evasion, there can be distinguished simple and complex scenarios. Simple scenarios in some cases, do not need a hypothesis, but it can define immediately specific version of criminal event, for example, in cases of small enterprises operating through bank accounts, but not submitting tax returns and not calculating and paing the due amount of taxes.“[3]

Criminal intelligence products – Criminal intelligence product is a result of an intelligence activity in the intelligence process, processed and ready for delivery and dissemination.

Intelligence product is the result of information gathering, analytical work, intelligence tests, which is processed in the intelligence cycle. It can be said that the intelligence product is processed in the manufacturing plant, and that the result of this is an intermediate product or a finished product ready for distribution to consumers, ie - the end users. The end product of the process of intelligence - crime analytics, is the analytical information (knowledge). Analytical information is a value-added capital.

Distribution phase – The distribution represents dissemination of finished intelligence analysis and various data towards their users, for their intelligence and investigative activities.

Feedback – What type of a feedback will follow in this phase depends on a character of the analysis. If the analysis is initiated on an alert, maybe informant should be informed on what intelligence officer / analyst intends to do with the alert (of course, after taking into account the confidentiality of the work). If the analysis is initiated as a task, it is necessary to present a documented plan to a user at an early stage in order to harmonize the course of the analysis.

5. SYSTEM, ORGANIZATION AND SECURITY MANAGEMENT PROCESS

Starting from multi-definition conceptual definition of modern management and security, from a theoretical and methodological approach to defining the concept of security management, this notion (security management) is seen in a broad multidisciplinary coverage, especially in terms of systems, organizations, freedom and human rights, needs, overall interest and the value of the individual, society and nature. Security management domain, as the basic concept, covers wide range of processes in achieving system and organizational security objectives that ensure security situation and sustainable existential needs, essential for the development of natural and fundamental human needs and overall interest, with due recognition and protection of fundamental

rights and freedoms, society as a whole and the nature, inside the system of sustainable development of overall civilization.



Figure 2. Theoretical and methodological concept and model of security management system

Source: Author [3]

"In order to improve overall security and democratic values of the individual, society as a whole and the general nature of influence, domain of the security management is a global system, so it is the overall natural and social being, but also covers components and subsystems, of such a global dynamic complex system. However, due to its ease of comprehension, scientific overviews, study and research, security management can be viewed through different prisms of such a global complex system in its various hierarchical levels, ie regional level, state level, the organizational level and the individual level. "Security management is, therefore, a process of achieving systemic organizational goals by working with people and through them and with other organizational resources, which ensures the security situation where a balanced physical, spiritual, social and material survival and sustainable development, of the individual and the community in relation to other individuals, community and nature, is provided. [3]

"Safety management primarily has a separate substance of knowledge, has its own unique character and methodology of action, its history, memory and consciousness." [3] Such systemic and organizational characteristics allow the owning of his own scientific methodology and active influence on the regulation of phenomenon of tax crime. Security management system is organized through its subsystems, components and specific methods of action. It exists between the hierarchical levels of higher and lower systems in a whole security system. So, the model of security management as a system and organization, through a process in private and social sphere, affects the level of tax crime.

The role of security management is specific and focused on continuous control of security processes within the country, regardless of what kind of polity we talk about. The main task of security management is, as much as possible, to predict and reduce (prevent) security risks and threats, in order to implement functions of nation-state:

economic, commercial, social, educational, health, ecological, etc ..., and in particular safety function. " [3]

"Security management is the process of achieving systemic organizational goals of public safety, from distortions of forms and continuity of state and state organization, constitutional rights and freedoms, the obligation to behave according to the legislation and the normal way of life, which is achieved by working with people and through them and with other organizational resources, in the system of sustainable development. [3]

"Security management is, therefore, a process of achieving systemic organizational objectives by working with people and through them and with other organizational resources, which ensures the security situation in which there is a balanced physical, spiritual, social and material survival and sustainable development of the individual and the community in relation to other individuals, community and nature. Achieving balance between the objective and subjective security of the state or society as a whole, and of the individual in it, is possible by a dynamic undertaking of functions of security management, in order to ensure internal and external security. Functions of security management are based on modern scientific knowledge and represent the functioning base of modern security management.

Security management is open, modern democratic system, based on the scientific knowledge that has a modern methods and techniques of action. By using specific methods and techniques they contribute to the realization of the vital goals of the organization. [3]

"The methodology of detecting and proving security threats in the economic sphere as a segment of the whole state system, or various forms of tax evasion and illegal evasion of public revenue in the financial subsystem of the same system, implemented this methods in heuristic and syllogistic area. These are the modern methods of operation, with specific methodological tools in the hands of security management of tax institutions, which serve to regulate the security of public revenue system. Thus, by the assessment of the security situation and the importance placed on security and economic dangers and threats, the states, through conscious application of methodological tools of security, regulate and influence the reduction of crime and various forms of insecurity. [3]

"Emerging of components in such an integrated system enables networks in tax system, to interact and act preventively in the exchange of information, with the aim of maintaining and development. With a methodological approach, security management, in such a tax system, regulates directly and indirectly the economic security of the state or the individual, society as a whole and the corresponding natural environment. Security management acts methodologically in a preventive way on "a possible chaos system" It, through the application of methods and methodological tools controls and prevents a chain entropy of a subsystem and the negative impact of a recursive situation within the system of public revenues. In this way, by the application of scientific knowledge, safety management in the practical sphere, methodologically regulates the security state, from the crime impact and threats to public revenues." [3]

6. DISPLAY OF RESEARCH AND TEST RESULTS

This paper presents the results of scientific research and testing of the concept of security management and criminal intelligence work on crime prevention in tax domain in Bosnia and Herzegovina, using the, so called, IMRAD method. Hypothesis is set in accordance with the scope and field of study, the research objectives, as well as current knowledge.

Hypothesis 1: Security management and criminal intelligence work contribute to effectiveness and efficiency of detecting and proving the crime of tax evasion;

The basic group of 254 surveyed respondents from all law enforcement agencies, is divided further into five subsets by specificities and competences of the organization in which they are employed in law enforcement. Connected to that, with a purpose to get a more complex analysis of responses and mutual comparison of opinions and positions, five subsets of respondents were created. For further study subjects were divided into subsets: ITA BiH, the Tax Administration of the Federation of BiH, RS Tax Administration, Ministries of Security and law enforcement agencies, prosecutors' offices in Bosnia and Herzegovina.

Table 1. Display of frequencies and percentages of relevant subsets of surveyed responders in specialist organizations

Organization	Frequency	Percentage	Valid Percentage	Cumulative Percentage
ITA BiH	73	28,7	28,7	28,7
Tax Administration of Federation BiH	38	15	15	43,7
RS tax administration	31	12,2	12,2	55,9
Ministry of security and law enforcement agencies in BiH	71	28	28	83,9
Prosecutors' offices in Bosnia and Herzegovina	41	16,1	16,1	100
Total	254	100	100	

Source: Author [3]

In the above table are presented frequencies and percentages of relevant subjects as a basic set, then subsets according to the specialty of performing duties, tasks and specialties of law enforcement agencies. Also, in the same way, are presented frequencies and percentages of the relevant subjects by gender, age, educational background, work experience and experience in performing jobs in law enforcement.

Analysis of the frequency and percentage of attitudes of the relevant sample of respondents, compared to the evaluation of alternative responses through measuring scale Likert-type, as a part of investigating the statement - Tax criminal intelligence, effectively and efficiently can be performed only by authorized persons, indicates that 109, or 42.9% of all respondents mainly agree with the above statement. Fully agree 119 or 46.9% of respondents. So 228 or 89.8% of respondents have a positive attitude, according to this statement.

Other frequencies, which can be considered with a negative attitude on this issue, are not significant and cumulatively account for only 4.3% of respondents. A negligible percentage of only 5.9% of respondents is neutral, ie they could not decide on this issue. Thus, significantly expressed 89.8% of relevant respondents have a positive attitude and agreement on this issue, and it was confirmed that "tax criminal intelligence, effectively and efficiently can be performed only by authorized persons."

Table 2. Tax criminal intelligence, effectively and efficiently can be performed only by authorized persons

Answers	Number of respondents	Percentage	Valid percentage	Cumulative percentage
Mainly disagree	11	4,3	4,3	4,3
Nor agree nor disagree	15	5,9	5,9	10,2
Mainly agree	109	42,9	42,9	53,1
Fully agree	119	46,9	46,9	100,0
Total	254	100,0	100,0	

Source: Author [3].

Table 3. Criminal intelligence process is a method of discovering and preventing tax evasion of organized crime

Answers	Number of respondents	Percentage	Valid percentage	Cumulative percentage
Mainly disagree	5	2,0	2,0	2,0
Nor agree nor disagree	22	8,7	8,7	10,6
Mainly agree	134	52,8	52,8	63,4
Fully agree	93	36,6	36,6	100,0
Total	254	100,0	100,0	

Source: Author [3]

Analysis of the frequency and percentage of attitudes of the relevant sample of respondents, compared to the evaluation of alternative responses through measuring scale Likert-type, as a part of investigating the statement – Criminal intelligence process is a method for detecting and preventing tax evasion organized crime, shows that 134 or 52.8% of all respondents mainly agree with this statement. Fully agree 93 or 36.6% of respondents. Thus, a significant number of 227 or 89.4% of respondents have a positive attitude, according to this statement. Other frequencies, which can be considered with a negative attitude on this issue, are not very significant and their cumulative amounts are only 2.0% of respondents. It is interesting that only 8.7% of respondents are neutral, ie they could not decide on this issue. Thus, significant 89.4% of relevant respondents have a positive attitude and agree on this issue, and it is confirmed that “Criminal Intelligence process is a method for detecting and preventing tax evasion organized crime”. “The analysis of the frequency and percentage of attitudes of a relevant sample of respondents, compared to the evaluation of alternative responses using measuring scale Likert-type, as a part of investigating the statement - Security management of tax institutions should contribute to the effectiveness and efficiency of detecting and proving the crime of tax evasion in Bosnia and Herzegovina, shows that 120 or 47.2% of the respondents mainly agreed with this statement.

Table 4. Security management of tax institutions should contribute to the effectiveness and efficiency of detecting and proving the crime of tax evasion in Bosnia and Herzegovina

Answers	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Do not agree at all	1	,4	,4	,4
Mainly disagree	3	1,2	1,2	1,6
Nor agree nor disagree	16	6,3	6,3	7,9
Mainly agree	120	47,2	47,2	55,1
Fully agree	114	44,9	44,9	100,0
Total	254	100,0	100,0	

Source: Author [3]

Fully agree 114 or 44.9% of respondents. So, a very significant number of 234 or 91.1% of respondents have a positive attitude, according to this statement. Other frequencies, which can be considered with a negative attitude on this issue, are not significant and cumulatively account for only 1.6% of respondents. Also, only 6.3% of respondents have a neutral position, which is negligible, it means that they could not decide on this issue. It is therefore very important that significant 91.1% of relevant respondents have a positive attitude and agree on this issue, so it can be concluded that: "Security management of tax institutions should contribute to the effectiveness and efficiency of detecting and proving the crime of tax evasion in Bosnia and Herzegovina".

Table 5. A continuous and joint training of judicial and prosecutorial authority with the management of law enforcement agencies in the field of tax evasion, is essential

Answers	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Do not agree at all	1	,4	,4	,4
Mainly disagree	2	,8	,8	1,2
Nor agree nor disagree	3	1,2	1,2	2,4
Mainly agree	80	31,5	31,5	33,9
Fully agree	168	66,1	66,1	100,0
Total	254	100,0	100,0	

Source: Author [3]

Analysis of the frequency and percentage of attitudes of relevant sample of respondents, compared to the evaluation of alternative responses through measuring scale Likert-type, as a part of investigating the statement – A continuous and joint training of judicial and prosecutorial authority with the management of law enforcement agencies in the field of tax evasion, is essential, shows that 80 or 31.5% of the respondents mainly agree with this statement. Fully agree 168 ili 66,1% ispitanika. Thus, a significant number of 248 or 97,6% respondents have positive attitude on this issue. Other frequencies, which can be considered with a negative attitude on this issue, were not significant and cumulatively account for only 1.2% of respondents. Also, only 1.2% of respondents have a neutral position, which is completely negligible, and they could not decide on this issue. Therefore, very important 97.6% of relevant respondents have a positive attitude and agree on this issue, and the conclusion is that: "A continuous and joint training of judicial

and prosecutorial authority with the management of law enforcement agencies in the field of tax evasion, is essential.”

7. CONCLUSION

Safety management as a discipline belongs to fundamental and applied sciences. As a fundamental scientific discipline security management tends to continuous expansion of its existing system of knowledge and to acquiring new knowledge, and as applied scientific discipline at the same time, is trying to find creative practical solutions to practical problems. Safety management as a concept, is aimed at the realization of the projected security by achieving and preserving sustainable security situation. In this regard, we consider security management as the modern architecture of the organization and / or systems. Historically speaking security management appears from the earliest period of human existence, from the moment of man's conscious and organized knowledge about security needs of individuals and society as a whole. Although historically speaking, security management is for a long time present in the human reality, it is still fighting for its proper place in the system of sciences. Security management is classified in social sciences, and it is in the recursive relation with the scientific disciplines that deal with the study of human survival. Security management is by its contents the scientific-technical, conceptual and methodological, system-organizational and operational practical framework for designing and preservation of tolerable sustainable security situation. The architecture of security management is a combination of interdisciplinary scientific and practical knowledge of management and security, as well as other scientific knowledge, practical experience of other social sciences, among which are included economics, legal science, political science, organizational science, criminal science, social science, psychology, computer science and knowledge from other fields. Security management structurally shapes its framework methodology and methods of work, but as a discipline in theory and in practice it is still being extended and complemented with a number of other sciences and scientific disciplines. Also, it can be concluded that the intelligence capital is a value, and irreplaceable intelligence and information resource, composed of potential and kinetic energy of intelligence information and data. It enables and promotes the creation of intelligence engagement connective tissue, which is applied in a wide field of action, including the field of detecting and proving organized crime, tax evasion, regardless of whether it is a direct and / or indirect taxes. On the basis of the results of integrated research on security management and criminal intelligence work in the system of sustainable development and application of scientific methods, is established its fundamental and practical contribution to efficient and effective detection and proof of tax evasion of organized and classic crime. This conclusion is based on the results of scientific research using a method of critical methodological research. In accordance with given descriptions and explanations in this paper, as well as based on confirmed results of the survey, unambiguous conclusion is made that security management and criminal intelligence work contribute to effective and efficient detection and proof of tax evasion crime. In this regard it can be concluded that the basic problem is adequately resolved, which is defined by hypothetical answer through the hypothesis set.

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RISK MANAGEMENT WHICH AFFECT THE SAFE TRANSPORT OF DANGEROUS GOODS

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Abstract:

The paper deals with all aspects of a successful risk management in facilitating the transport of dangerous goods and conceived a model for its management. Only risk management includes analysis of the impact on safety in the transport of dangerous goods, the discovery of their causes and consequences. This applies particularly to the stage of recognizing the hazards, risk assessment and define measures to reduce their occurrence, and to remove the causes, and thus the consequences that may occur due to inadequate risk management. The defined corrective and preventive measures for reduction of risk consequences, would be also a good basis for the application of design techniques of risk management.

Keywords: *dangerous goods transport, risks, management, model, preventive measures, corrective measures.*

1. INTRODUCTION

When hazardous materials are found in the transport represent dangerous goods. If the dangerous goods handled inappropriately, it may cause fires and explosions with release of flammable, toxic and oxidising gases, devastatingly high temperatures and pressures, the formation of dangerous compounds, etc. In doing so, they threatened the safety and health of people, environment and property.

Transport of dangerous goods is a process that includes the preparation for shipping, packaging of dangerous goods in the packaging or filling tanks, tank-containers or vehicles for bulk cargo, transportation of dangerous goods to the destination, disruption of transport for temporary retention or storage, transshipment to another type of vehicle or unloading emptying tanks.

Considering physical and chemical properties of dangerous goods, its transportation process is high-risk, with all the consequences for humans and for the environment. The risk is particularly expressed when it comes to an accident during transport. Thereby, participants in the transport process are particularly vulnerable as well as others that can be found in the area of the potential dangers of hazardous cargo during its transport.

The mere fact that during the transport of dangerous goods there are risks imposed by the need to control them. The basis for risk management primarily consists on human resources who are directly involved in the implementation of this process (consignor, carrier, consignee, loader, packer, filler, tank-container/portable tank operator, unloader), material resources (vehicles, containers, equipment, etc.) and information resources

(transport documentation, instructions in writing, labels, orange plates and other holders of information) and efficiently managing them.

2. SAFETY TRANSPORT OF DANGEROUS GOODS

Safe transport of dangerous goods is part of the general road traffic safety. It is one of the most important output variables of the system of transport of dangerous cargo, Figure 1, which depends on several factors: driver, vehicle, road, environment and nature of hazardous cargo. Most of these factors are input variables that are in the system of transport of dangerous goods, under the influence of internal elements of the system, transform the safety as an output variable size.

The aim of safe dangerous goods transport is decreasing the number of accidents and their consequences. In order to achieve this aim it is necessary to continuously and systematically work on raising the level of competence of the participants in the transport process for the handling of dangerous goods.

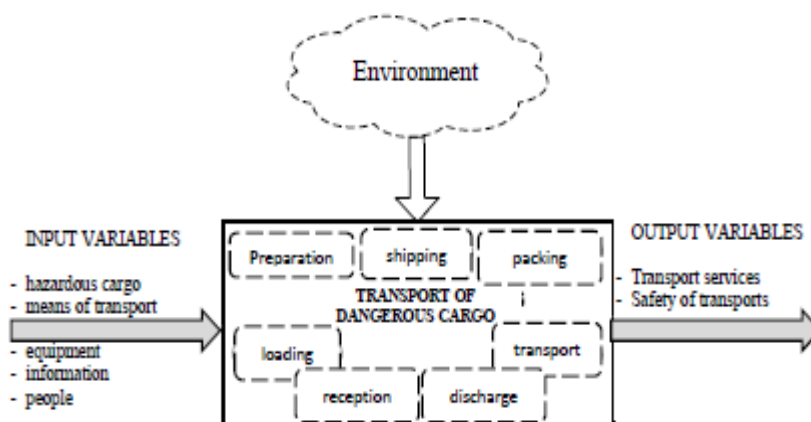


Figure 1: Schematic representation of the system of transport of dangerous goods⁸

Safe transport of dangerous goods can and must be managed, where under term management refers to the process of planning, organizing and controlling and improving the activities and the use of available (secured) resources in achieving set goals.

The safety system of transport of dangerous goods in particular have an important role and the preventive measures they need to respond to the consequences of potential problems. They must be timely planning and design, while keeping in mind the likelihood of occurrence, effects and the importance of certainty in terms of eliminating the causes of endangering the safety dangerous goods transport.

⁸ Dragutin J., Dusko V. Novak M. : The role of the main participants in the safe transport of dangerous goods, 9th scientific Symposium with international participation - TRAFFIC ACCIDENTS, Zlatibor, May, 2015.

3. RISK FOR THE TRANSPORTATION OF DANGEROUS GOODS AS A SAFETY ISSUE

Generally the term risk includes certain exposure the factors that its activity can lead to undesirable consequences.

The basic definition of risk to the OHSAS says that risk is a combination of the probability of a hazardous event or exposure and the severity of injury or threat to health (damage to health), which may be caused by the hazardous event or exposure (quote: standard SRPS OHSAS 18001: 2008). At risk should seek and find technical and organizational solutions for its reduction to a level that can be controlled and can be operated.

In essence, risk is defined as the product of the probability of future events and the severity of the consequences of this event. The probability and consequences can be in different ways qualitatively or quantitatively evaluated using appropriate methods. Thus, The Law on Occupational Safety and Healthy defined risk as the probability of injury, disease or damage to the health of an employee due to threat, while OHSAS standard defined risk as a measure of the probability and consequences of potentially hazardous events.

The risk during dangerous goods transport presents a combination of the probability of an accident or emergency and harmful consequences for human health and life, property and the environment. Possibility of emergencies during transport of dangerous goods, with major consequences necessitate professional management and ecological risk. It is in the transport of hazardous goods is reflected as injury or death that is directly associated with the transport of dangerous goods and where such a violation requires intensive medical intervention, longer hospital stays and an inability to work. Also, the loss or leakage of dangerous goods in quantities during the emergency must report to the competent authority of the country in which the event occurred (obligation to 1.8.5 ADR). these amounts are⁹:

Dangerous goods transport category 0 or 1 in an amount greater than or equal 50 l / 50 kg;

Dangerous goods transport category 2 in an amount greater than or equal 330 l / 330 kg and

Dangerous goods transport category 3 or 4 in quantities greater than or equal to 1000 l / 1000 kg.

Extraordinary events during the dangerous goods transport can be accompanied by numerous expenses such as: the cost of the destroyed or lost dangerous goods or costs related to compensation for damage to vulnerable environment, the cost of any injury to persons, both those involved in the transport process and third parties, as well as other costs associated with accidents in the transport of dangerous goods.

The risk in the transport of dangerous goods by simply exists and is not something that necessarily a bad thing - it is realistic, and in most cases it can be avoided. The risk, as such, represents an opportunity for improvement if it is detected on time, determine and define the methods and measures for its management. It is also necessary to take into account the fact that the complete elimination of risk is not possible.

⁹ ADR (European agreement concerning the international carriage of dangerous goods by road), applicable as from 1. january 2013.

The assessment of professional risk and the risk of accidents during transport of dangerous enables establishment of a number of preventive measures and activities in order to reduce the likelihood of accidents and their potential consequences.

4. RISK MANAGEMENT AS PART OF SAFETY MANAGEMENT OF DANGEROUS GOODS TRANSPORT

Risk management is a process that enables people and organizations deal with the uncertainty of its consequences, planning and carrying out activities which will protect its vital interests and resources.

The existence of a hazards during transport of dangerous goods means that at the same time there are real risks to the lives and health of people, material goods and the environment.

The risk management process in the transport of dangerous goods can be defined as a set of activities to identify and control those elements of the transport processes and their outcomes that can potentially lead to adverse conditions in the system of transport of dangerous goods. It aims to create the conditions for eliminating or reducing the risk to an acceptable level. Acceptable risk is considered to be one risk that can be managed under certain prescribed conditions.

The purpose of risk management of dangerous goods transport is to identify the relevant risk factors for each activity of the transport process, from the activities of the consignor and to activities unloader, then to develop a risk management plan to reduce the likelihood of unsafe conditions.

Each participant in the transport process must be able, in the course of carrying out its activities continuously, to remove existing and potential dangers and safety risks and to remove or reduce the opportunities for safety breaches transport of dangerous goods, or for the formation of an accident.

Risk management in the transport of dangerous goods is a central activity of management responsible for the implementation of transport. All stakeholders in the transport process have their share of responsibility in risk management, in proportion to their participation and role in the process.

The general philosophy of risk management in working processes and in transportation is based on the principles set out in OHSAS 18001. Compliance with the structure of ISO 9001 and ISO 14001 indicates that the likelihood of success is concentrated in integrated management systems.

Risk management of dangerous goods involves identification and analysis of hazards, risk assessment, accident insurance, planning and implementation of adequate measures of prevention, preparedness and response to accidents and rehabilitation consequences, Figure 2.

Identifying hazards is the process of recognizing that a hazard exists and defining sources, the probability of an event or set of circumstances as well as their potential consequences.

Hazard in the transport of dangerous goods may be defined as the source, the situation or process that can lead to damage in the form of injury of person or damage to health (or both), as well as environmental pollution. Identification of hazards associated with the transport of dangerous goods includes the verification of all critical points in the activities of the transport process, starting with the preparation for shipment to the final

hand-over of cargo to the final user. It is necessary to analyze the human factor as a possible cause of the accident.

Hazard recognition during the implementation process of transport of dangerous goods is a complex task and needs the teamwork between the parties, who must have a high degree of knowledge and experience. Significant assistance in recognizing hazards can provide well-prepared questionnaires (checklists) for certain technological stages of the transport process. All threats identified by the phase of the transport process is a list of hazards, which is the basis for risk assessment for the transport of dangerous cargo. An example of a check list only at the stage of transport, on the basis of which an assessment is made of risks is given below, Table 1.

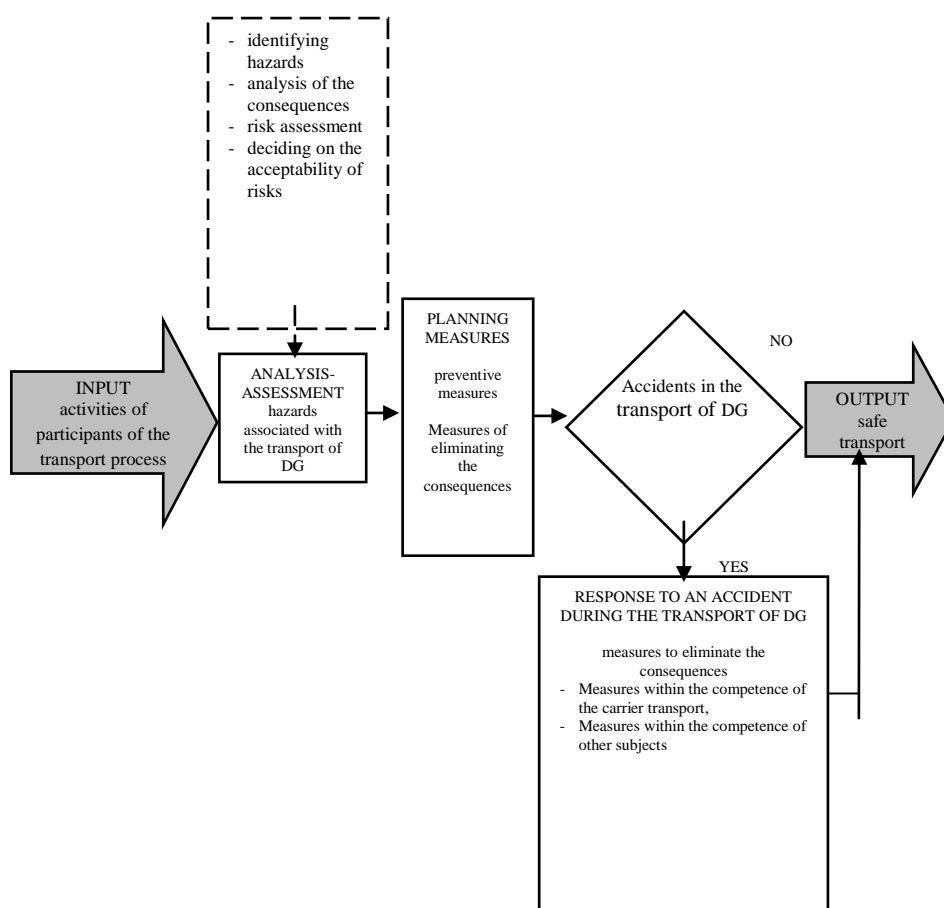


Figure 2: Conceptual scheme of risk management in the transport of dangerous goods

Table 1: Checklist for the identification of hazards associated with the transport of hazardous goods

Participant-bearer of technological phases in the process of transport	Type of hazards	Hazards	
		YES	NO
carrier	failure to determine whether the dangerous goods to be transported accepted for carriage according to ADR		
	failure to determine that the consignor of a transport put at the disposal of all information prescribed in ADR related to the transported goods		
	failure to determine that the required documents are in the transport unit		
	failure to determine if instead of paper documents used method of operation of electronic data processing or electronic exchange of data, that data is available during transport in a manner that is at least equal value, as well as documentation on paper		
	failure to determine by visual checks that the vehicle or cargo have no obvious defects, leakages or cracks, not missing pieces of equipment, etc.		
	failure to determine that when the tank is not overdue the next test		
	failure to verify that the vehicles are not overloaded		
	failure to determine that the vehicle set prescribed posters and labels		
	failure to determine that the vehicle has equipment prescribed in the written instructions for drivers		
	of the set deviation from the requirements of ADR, carrying a consignment that the requirements are not complied with		
	not keeping to the shipment as soon as possible stop in establishing deviations from the regulations in the course of transportation, which could jeopardize the safety of transport		
	failure to implement measures for safe disposal of the consignment at its stop in establishing deviations from the regulations in the course of transportation		
	continued transportation while requirements that were not met		
	continued transport and that the competent authority (authorities) has not issued an authorization		
	not keeping the necessary administrative support to the carrier by the competent authority in the event that the requirements could not be met		
	not keeping the necessary administrative support to the carrier by the competent authority in the case for the remaining portion of the carriage is not granted the authorization		

Hazard analysis is the determination of the source and cause of the hazard of an accident, people and environments exposed to danger, severity the consequences of accidents, as well as the likelihood of damage to life and health of people and the environment. In doing so, take into account the adequacy and effectiveness of the measures implemented to protect. To ensure sufficient objective analysis of the hazards, it is necessary to use the best sources of information and methods of their processing. Sources of information may include records of the past, adequate experience, processes observation, work practices, interviews with workers, appropriate literature, tests, experiments and simulations, appropriate models and opinions of specialists and experts.

Risk assessment is the process of assessing the risk of hazard, taking into account the adequacy of existing controls, and deciding whether the risk is acceptable or not. It is characterization and determination of the level of risk for each identified hazard. Risk characterization represents a synthesis of information on the hazards from an analysis of

hazard, indicating the needs and interests of decision makers and vulnerable side. Those responsible for risk assessment should applicate or develop adequate methods for risk assessment. In practice, the use of several dozens of general and specific methods adapted to various technological processes (AUVA, BG, KINNEY, PILC, FTA, HAZOP,...). There are qualitative methods, semi quantitative methods and quantitative methods. Qualitative methods for risk assessment determine on descriptive manner the level of risk (eg, insignificant, low, medium, high ...). Quantitative risk assessment using a numerical value for evaluating the risks. One form a matrix of risk assessment is given in Table 2, and on the basis of which will be made in the risk assessment phase of the transport of dangerous goods, Table 3.

Deciding risk acceptability or categorization of risk is its classification on acceptable, conditionally acceptable and unacceptable risks in relation to the estimated levels. For the assessment and categorization of risk are often used risk matrix. The matrix is shaded category of acceptable risk, i.e. the risk that can be controlled under certain conditions, while the risks whose score is not shaded fall into the category of unacceptable risk, Table 2.

Table 2: Matrix for risk assessment

Probability	certainly (5)	very probably (4)	probably (3)	little probably (2)	Almost impossible (1)
Consequences					
death (5)	25	20	15	10	5
Serious injury (4)	20	16	12	8	4
injury (3)	15	12	9	6	3
Higher environmental degradation (2)	10	8	6	4	2
less endangerment environment (1)	5	4	3	2	1

Table 3: Risk assessment in the phase of transport of dangerous goods on the basis of risk matrix

	Description of danger	Probability	Consequences	Rank risk
1.	failure to determine whether the dangerous goods to be transported accepted for carriage according to ADR	2	2	4
2.	failure to determine that the consignor of a transport put at the disposal of all information prescribed in ADR related to the transported goods	2	1	2
3.	failure to determine that the required documents are in the transport unit	2	1	2
4.	failure to determine if instead of paper documents used method of operation of electronic data processing or electronic exchange of data, that data is available during transport in a manner that is at least equal value, as well as documentation on paper	2	1	2
5.	failure to determine by visual checks that the vehicle or cargo have no obvious defects, leakages or cracks, not missing pieces of equipment, etc.	4	3	12
6.	failure to determine that when the tank is not overdue the next test	2	3	6
7.	failure to verify that the vehicles are not overloaded	3	5	15
8.	failure to determine that the vehicle set prescribed posters and labels	2	1	2
9.	failure to determine that the vehicle has equipment prescribed in the written instructions for drivers	3	1	3
10.	of the set deviation from the requirements of ADR,	2	2	4

	carrying a consignment that the requirements are not complied with			
11.	not keeping to the shipment as soon as possible stop in establishing deviations from the regulations in the course of transportation, which could jeopardize the safety of transport	2	4	6
12.	failure to implement measures for safe disposal of the consignment at its stop in establishing deviations from the regulations in the course of transportation	2	3	6
13.	continued transportation while requirements that were not met	3	2	6
14.	continued transport and that the competent authority (authorities) has not issued an authorization	2	2	4
15.	not keeping the necessary administrative support to the carrier by the competent authority in the event that the requirements could not be met	3	2	6
16.	not keeping the necessary administrative support to the carrier by the competent authority in the case for the remaining portion of the carriage is not granted the authorization	2	2	4

Unacceptable risks require defining corrective measures that will either completely eliminate the risk, or provide a control to reduce the risk to an acceptable level. Risks that are not categorized considered vague and require measures which will provide the necessary information to resolve undefined.

Planning preventive measures is the responsibility of the participants of the transport process in accordance with the applicable national legislation. Preventive measures are a set of measures and procedures that are undertaken with the aim of preventing and reducing the likelihood of accidents in the transportation of dangerous goods and possible consequences. If the assessment of risk, due to the inadequacy of the measures implemented, establish the existence of unacceptable risk, then the participants of the transport process required to applicate modern technical achievements, avoiding the threats at the source by replacing hazardous less hazardous, using collective and individual protection etc, in order to decrease the level of risks.

Planning corrective measures to eliminate the consequences of accidents in the transport of dangerous goods involves the development of appropriate conservation plans before the start of work activities in the transport process, which will include the implementation of all necessary measures for the elimination of consequences. To create the necessary plans, their coverage, applicability, efficiency and effectiveness, there are prescribed numerous norms at the international and national level. Elements for creating protection plans provide an analysis of the risk of accidents. Protection plans are made for any situation where there is hazardous of identified activities shall be coordinated and complement each other.

The elimination of the consequences of an accident is of special importance readiness, defined as the stage reached prepare all subjects (human and material) for the purpose of taking adequate response to the accident with minimal consequences. In response to the accident, depending on their severity and size, in accordance with the harmonized protection plans, should participate authorities and institutions responsible for it, primarily trained personnel and material.

Measures to eliminate the consequences of accidents (repair) aim to monitor after-accidentally situation, recovery and rehabilitation of the environment and the threat of

recurrence of the accident. Rehabilitation includes the development of a rehabilitation plan and a report on the incident.

The prescription of preventive measures, as well as plans for response to incidents and remediation consequence makes a comprehensive risk management system of transport of dangerous goods, which encourages the elimination of (avoiding) any risks or to reduce them to a minimum acceptable level.

5. CONCLUSION

Risk management in the transport of dangerous goods should be viewed in the spirit of the overall effort to improve the safety and it is also part of the safety transport management process. In doing so, the purpose is to create conditions for the elimination of hazards or to reduce them to an acceptable level of risk, which can be managed under certain prescribed conditions.

Risk management in the transport of dangerous goods should be viewed as a set of activities to identify and control those elements of the transport processes and their outcomes that can potentially lead to adverse conditions in the system of transport of dangerous goods.

To effectively manage risk in the transport of dangerous goods it is necessary to identify the relevant risk factors for each activity of the transport process, from the activities of the consignor and to activities of unloader, then to develop a risk management plan to reduce the likelihood of unsafe conditions.

One of the initial activities in the risk management process of the accident when transporting dangerous goods must be their assessment that facilitates the establishment of a number of preventive measures and activities in order to reduce the likelihood of accidents and their potential consequences.

Management responsible for the implementation of the transport of dangerous goods for its central activity must set up risk management. Beside him, all participants in the transport process, proportional and role in the process, have their share of responsibility in risk management. Accordingly, each participant in the transport process must be able, in the course of carrying out its activities continuously removes existing and potential hazards and safety risks and to eliminate-reduce possibilities to safety of dangerous goods, or for the appearance of an accident.

One of the most important prerequisites for successful risk management is that all participants in the transport of dangerous goods comply with appropriate requirements of ADR. The participants of the transport process dangerous goods shall take appropriate measures to prevent damage or injury, subject to the type and extent of foreseeable dangers.

If the performance of the transport of dangerous goods occur due to damage or injury to participants in the transport process must be able to take measures reducing their harmful effects. In this context, they must be in the case of imminent danger to public safety, immediately inform the fire rescue units and police and provide them with the necessary information for intervention.

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EFFICIENT RESPONSE FACTORS TO THE "EXTREME" EVENT

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Abstract: *In theory and research of disasters, there are two views how to articulate the critical factors of efficient response to disasters. On the one side there is crisis management researchers point of view who tries to structure, monitor and manage response to disasters. The other is from the social scientists researchers point of view to document and describe the nonstructural factors that are critical for successful and efficient problem solving. The specificity of the response to the disasters could be best observed in the event that are labeled as "extreme". This paper deals with considerations that identify the critical success factors for response to extreme events as well as the typology of the organizations engaged in the crisis response phase to the events of this type.*

Keywords: *response; critical factors; extreme event; agility; improvisation;*

1. INTRODUCTION

Extreme weather and climate events generate a significant impact and in my opinion are the most dangerous challenges to the society when we talk about the climate changes. According to the latest report of the Intergovernmental Panel on Climate Changes, there is a growing belief that some extreme events become more frequent, more widespread and/or more intense than those that took place during the 20th century. [1] The probability of the natural disaster occurrence depends largely on the geological, geographical and climatic factors.

Natural disasters of extreme character are reality and they result in loss of life and significant economic, financial but also environmental consequences. For Cyclone "Tamara" that swept the territory of Bosnia and Herzegovina (BiH) during 2014, it could be said that it was an extreme event because it essentially consisted of two critical events. The first critical event was done by a cyclone that could be called a natural disaster because it was provoked by the meteorological activities beyond the human control and it brought precipitation greater than the annual average in just a few days. In the second phase there happened a spillover of drainage canals and the complete collapse of the whole drainage canals system on the rivers in the affected area, which led to massive flooding and consequently to the occurrence of landslides that endangered the population. Flooding in this case could be described as another critical event or as a disaster caused by human, because it occurred after years of neglecting and maintaining ducts, insufficient education of the population about the risks and the degree of danger of flooding, inadequate planning, unplanned felling forests, ignoring standards of construction and illegal construction and the lack of training and rehearsing protection and rescue system at all levels, from municipalities across the entities to the State level. This phase of disastrous events completely destroyed the ability of the local communities and surpassed the capacity of response of all levels of protection and rescue in Bosnia and Herzegovina.

The perceived impotence of protection and rescue system during this extreme event, shocked the affected area. Taking this as an example for consideration, faced with the

reality that we are extremely vulnerable to the threats and dangers of natural character and realizing that the intensity of these events could surpass historically registered proportions, it is fair to set the question of preparation, response and recovery of organizations for protection and rescue in extreme events, in a way that minimizes interruption and disruption of the normal functioning and achieve maximum resistance of the social and economic system. This paper considered the nature of the challenges caused by extreme events, described recent experiences in responding to ekstremni event, discussing approach by factors of successful responses in preparation, response and recovery from the event with potential catastrophic outcomes and offers organizational typology based on the identified factors of successful responses.

2. „EXTREME EVENT“ CHARACTERISTICS

Cyclone “Tamara”, who on May 13, 2014 affected mainly Bosnia and Herzegovina and Serbia, definitely could be seen as the example of extreme event. The cyclone caused heavy rains, unprecedented in previous meteorological observations, [2] which, for a period of two days, caused the creation of a mass and an unprecedented flood, covering an area of about 22,300 square kilometers (Figure 1). The weakening and disappearance of the cyclone started during the May 16th, 2014. Multi-day rainfall caused numerous landslides, endangering more than 1.3 million people, encompassing more than 409,000 households. In BiH, the flood covered all the major rivers in the area of about 13,200 square kilometers (26% of the territory of BiH), destroyed some 7,500 residential buildings and causing more than 80,000 people left their homes. Flood and landslides generated a secondary problem, shifting about 106 square kilometers of mine suspected areas in at least 33 municipalities in BiH.¹⁰ [3] Most of the roads had been cut off. Emergency services were themselves victims that situation seemed critical and labeled this event as catastrophic or extreme.

Protection and rescue operations began immediately after the beginning of an extreme event, on arrival of the first requests for assistance. Extreme events require a coordinated response to several organizations in order to avoid catastrophic failures that would arise as a result of overcoming the local resources capacity. This is the task of any government and one of the primary reasons why government exists. Response capabilities and local resources (including mutual support from neighboring communities) may be insufficient and quickly exceeded. Members of the local emergency services, who are responsible for responding to incidents of minor importance, may be among those who are affected and unable to perform their duties. This is exactly what happened in a couple of the local communities in which the emergency services have become victims of the event, left without its own infrastructure and without reinforcement from higher levels of government for the next few days.

Extreme event represents a rapidly developing, highly stressful event that causes significant disruption of the normal functioning of critical infrastructure in areas such as energy, transport, telecommunications, public health and medical services, has operational implications and can not be fully predicted.

¹⁰ According the BH Mine Action Center, during floods 2014 there were found and removed 140 mines, 1700 pieces of Unexploded ordnance and around 40.000 pic of ammunition.



Figure 1: Cyclon Tamara and flood areas in 2014
(www.republikasrpska.net, accessed on July 23, 2015)

Complete loss of key and critical infrastructure in some communities and the fact that the emergency services, who have been responsible for the first response, were the victims of the event, are the main factors distinguishing the extreme events of the past, nearly catastrophic events in the history. In the meantime, nothing has been done in the area of increasing resistance of critical infrastructure. Failure to provide a detailed and credible operational picture and the situation on the ground during floods, have been well documented since the lack of creative and quick reaction to the situation was caused by incomplete and insufficient information, lack of tested response plans and total loss of infrastructure in the affected areas. A total breakdown of communication and the existence of proven and accurate information were a key part of failure in the initial phase of the response. As a result, response activities had to start without the necessary level of detail, the complete knowledge of the situation and the key elements of the assessment. Senior levels of government have provided support to affected communities in order to save lives, prevent human suffering and mitigate further serious damage of infrastructure. It called for the mobilization and allocation of funds and resources outside the jurisdiction of local communities. This event produced a serious impact on the environment, seriously questioned the ability and capacity of the government and communities to achieve a timely recovery from extreme event.

Extreme event has a unique characteristics/dimensions requiring that response plans/strategies are flexible enough to efficiently evaluate the needs and demands from the field. We talk about completely new events, with specific variables, which require a certain amount of improvisation and creativity which is a precondition for effective management. First, it is atypical, since it goes beyond ordinary expectations and there have been no conclusive indication of its origin in the past. Second, the effect is extreme and third, despite the atypical status, human nature compels us to invent additional explanation for its occurrence and so make it explainable and predictable (post-hoc criticism). It should be borne in mind that by the law of symmetry, happening of the extreme incredible event is equivalent to nonhappening of something extremely probable. Despite inadequate initial response, this extreme event did not result in large numbers of casualties and/or displaced persons, although the number of deaths caused by the event

was far lower than in the first estimate.¹¹ [4] The extreme event can occur with little or no warning. Some incidents, like the rapid outbreak of infectious diseases, could be predicted long before detection. The failure of the levees and the resulting floods, which have inundated more than 80% of the cities, although they could be predicted by the experts, there were little or no warning and it completely surprised residents, local authorities and emergency services (especially Doboj). Due to the complete collapse of the system of communication, easing the dam was not known to managers of emergency services, even a few hours after the failure.

Local authorities have been prevented from realizing their usual functions which have an impact on prolonging the recovery period. The incompetence led to this that certain leadership roles had to take people out of the local community (appointment of commissioners by the Government of Republic of Srpska). Emergency services were also victims of floods and resources were flooded while staffs for protection and rescue were not operational. The result was the emergence of decentralized decision-making but realization of the idea of the centralized control existence and decentralized decisions of the various activities of the local communities on the ground, were disabled by complexity and gravity of the situation. Extremely important and indispensable role in the "extreme events" have had the media. During this event there were no filtering of the event to an extent that is common, especially in the electronic media. The Public Broadcasting Service, in its coverage mainly defined the disaster, especially since there were no significant and organized presence of the authorities on the ground in the first days of the flooding. However, their role has been of great importance in order to inform both the general public and the local residents about the situation in the affected areas. In the end, the political arena has become even more important than usual. Involvement in the field, by the representatives of the government but also the opposition, has become remarkable, especially in the context of the upcoming general elections. Very quickly, the response to the disaster has become a key political issue, which has carried out over into the recovery phase, up to the general elections, after which all was forgotten.

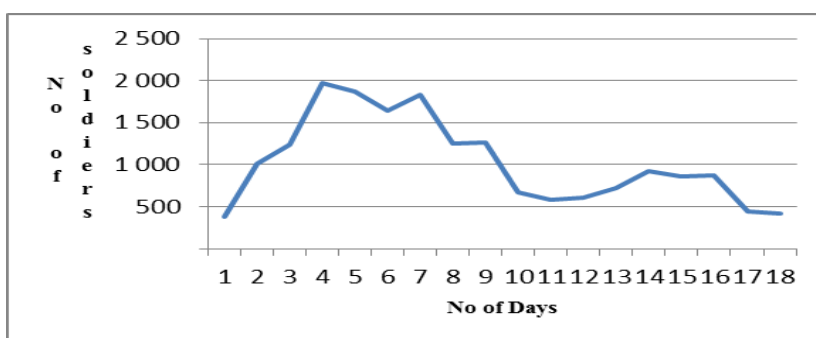
3. RESPONSE TO „EXTREME EVENT“

Extreme events will have happened regardless how many efforts have been made to minimize the hazards and risks of developing and reducing vulnerability to these events. When such an event occurs, response and recovery demands engagement of significant forces and resources and organizational capabilities. Organizational structure during the response phase on extreme events should be based on two principles. The first involves organizational structures that have a required level of competence, equipment and ability to react to everyday situations, which forms the basis for the creation of responding structures to extreme events. The second relates to the need that the responding resources to everyday situations must be sufficiently flexible and ready to expand when they are reinforced with additional resources in order to provide an adequate response to the increased demands, arising from an extreme event. This includes the standardization of organizational structures for responding to emergency situations, especially extreme events. In the case of 2014 floods, response and recovery demanded the participation of large number of organizations and thousands of people (for example Graph 1).

¹¹ Official data: 19 dead persons and 1 missing person.

In comparison with investments in resources that are intended to manage risk and prepare for emergency response in the time that preceded the emergence of "extreme events", an organization that existed after the events were larger and more complex (Figure 2). The Response phase to an extreme event could be divided into several sub-phases that reflect the evolution of the objectives and functions over time. The initial phase of response was realized by reaction of the local resources (emergency services) which reacted to the situation, while the external resources had been mobilized. Integration was the next necessary step for the reason of structuring these resources in functional organization, able to identify the needs and provide services that are beyond the capacity, skills and capabilities of local emergency services. If the mobilization and integration were successful, organizations engaged in response to an extreme event reached a production phase where they were very productive and implemented tasks routinely.

Graph 1: Engagement of the Armed Forces during floods



Finally, the presence of large external resources was resolved through the demobilization of these resources, handing over responsibilities to the local resources and the transition to the recovery phase. In an extreme event, a significant and large external forces and resources are needed for a longer period of time for which the planning of the transition has to be done and it must be managed. These sub-phases of a successful response to the emergency situation are linked because success in one sub-phase prerequisite for success in the second.

Approach through success factors could be used to describe the main factors that must occur at each stage of reaction to an extreme event. [5] These factors of success are those key areas where they are absolutely necessary desired results, where things need to go in the right direction if we want to achieve the success of the organization. Researchers have developed a framework which describes the success factors during response to extreme events but also during the recovery phase of the same. This framework is based on observations and studies of the response to a series of extreme events or the results of a series of exercises. Success factors are connected and illustrate how crisis management allows quick transition from the initial chaotic situation to the effective delivery of assistance during the sub-phases of production and later during the recovery phase.

They could be reached only if the organization dealing with the management of the emergency is an open organization, aware of the situation and adaptable to the rapidly changing environment, demonstrating the importance of improvisation, adaptability and creativity of the management of the state of chaos to stability.

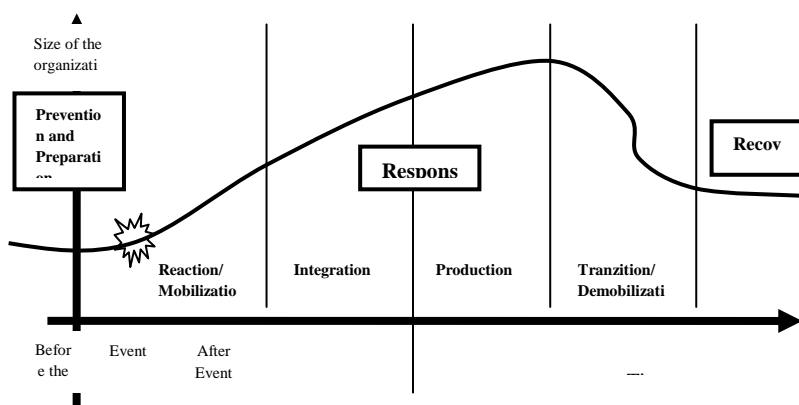


Figure 2: Extreme event response

More importantly, these factors are related to the basic elements to predict future problems, creating potential to preempt them before they occur, avoiding reactive bureaucratic response. [6] Thus, sub-phases of the *initial response and the mobilization* includes: sharing information about the situation through a network of resources involved, the deployment of planned resources in areas reserved for saving the lives of the people, the deployment of mobilized resources based on accurate estimates of the needs of people, resources and equipment and at the end the inspection of mobilized resources from the pre-planned organizations and structures. *Integration* means that resources that are mobilized to respond are quickly and effectively integrated into the pre-determined organization to respond to an extreme event, coordination organized, a system for response networked, capabilities for the collection, analysis, synthesis, and internal and external distribution of information set and enabled maintenance of operational and organizational flexibility and agility. *Production* means that the organizational productivity and sustainability of the resource are at the appropriate level, that the requirements and measure productivity is developed and monitored and that is established system of accountability and identified requirements for recovery. *Transition and demobilization* imply identification of needs and plans for the transition to local authorities, demobilization of external resources on in advance proposed plans and procedures, provided resources to support the social and economic recovery and establishment of a system of organizational learning (identified lessons).

4. EFFICIENT RESPONSE FACTORS

Extreme events require consideration of a broader range of factors due to their characteristics. These events require constitution of a unique socio-technical system based on organizations that use their resources in order to protect the community. [7] The analysis of the literature done by Coskun and Ozceylan indicates that among the factors are most often leadership, adaptability, the flow of information, communication, agility discipline and flexibility.[8] In general, the factors of effective responses are those things that must be done correctly in order to achieve success. This applies to a relatively small

number of areas where it is absolutely necessary to achieve success in reaching the goals of the organization. [9] Identifying the factors of effective response creates a common point which assists in guiding and measuring the success of the organization and it points out what is essential and what turns people to perform their duties in the proper context and work together on achieving the objectives. During the response to an extreme event, roles, responsibilities and subordination at all levels must be clearly defined in order to achieve a successful and rapid decision-making.

Leadership encompasses a process in which the individual influences the behavior of the people, mobilizing them and focusing on the achievement of certain common goals of the organization. When we talk about leadership, an essential part of it are the styles of leadership and management that have a decisive influence on the management of the organization which is particularly reflected in crisis. There are several approaches to determining the styles of decision-making [10] but for the purposes of this paper will be considered knowledge, abilities, skills and personality traits. So we had four types of leaders: competent, bureaucratic, flexible and incompetent. Leadership is an essential factor of an organizational successful response to extreme events. Strongly expressed leadership clearly expresses the vision of the organization, manage and train personnel and represents the programs and activities of public, political leaders and the media. I think that the perspective of an effective response to emergencies would be exactly the development of flexible, agile and innovative leaders.

Discipline could be defined as a form of self-control or behavior, acceptance and submission to authority and control while agility is the ability of quick and easy movement. [11] Turner stated that the discipline is the foundation for any successful enterprise. [12] The construction of any major system has to be based on discipline while the agility is synonymous with speed, lightness, resourcefulness and zeal. Discipline and agility are treated as two sides of the same coin, because discipline creates a well-organized experience while the agility uses experiences in responding and adapting to unexpected circumstances. The organization which is in charge of emergency response needs to have both the discipline (structure, organization and procedures) and the agility (flexibility, creativity and improvisation). It is interesting to notice that the root of discipline is within the profession of crisis management. It is similar situation with the concept of the incident command system which has been used in one single organization (firefighters) and then become the standard for all organizations involved in the emergency response. The advantage of this concept is to create the necessary discipline for multi-agency response. When it comes to flexibility, creativity and improvisation during the response to extreme events, it is interesting to notice that they are much more prevalent in open systems which provide an environment in which there is a need for coordination, cooperation and decentralization of decision-making in relation to closed systems that operate in an environment that prefers the need for command, control and centralized decision-making. However, the need for improvisation exists because without it the system loses flexibility in a changing environment which requires adequate preparation. [13] Improvisation is seen as a combination of planning and creativity which is particularly reflected in extreme events that stretch the existing organization, reconfigure it or completely destroye it. [14] Response to extreme events requires an organization that has distributed decision making with high degree of flexibility and innovation as the ability to quickly build flexible organizational structure is seen as a key prerequisite for success. [15] Training and readiness allow the ability to detect and

manage the unexpected resulting in the ability to improvise and shortening the interval between the detection of unexpected events and reactions to it.

Communication has become a growing critical functions in crisis management. The distribution of timely and accurate information to the public, the leadership and the media plays a very important role in the effective management in extreme situations. Providing information during the preparation and prevention phase has the purpose of preventing and reducing the risk of future disasters. For a successful communication it is necessary to establish a form of partnership with the media. In its reply to the extreme situation, the communication objective is to provide early warning to the public and informations about evacuation and the current situation. The basis for effective communication is focusing on the general public, engagement of the leaders, the inclusion of communication in planning and operations and creating partnerships with the media. Providing timely and accurate information to the partners, the public and the leaders is a critical element of management function in extreme events, which is especially important during the response and recovery phase of extreme events. Involvement of leaders is also one of the preconditions of successful communication. It means not only the establishment of clear lines of communication, but also the availability of the leaders to the media in order to send messages to the public emphasizing the importance of communication. Good communication is based on the collection, analysis and distribution of accurate and timely information. It defines the task, the manner of its achievement and the timeframe. A quality communication ensures that the public is informed about all aspects of extreme events response and raising the level of trust between all involved parties. The media have a primary role in communicating with the public. No governmental organizations will never have the opportunity to build such a communications network as those developed by media. Establishing a partnership with the media is a prerequisite for ensuring timely and accurate information to the public.

Training and equipment of personnel is a prerequisite that the organization successfully respond to extreme events. Providing the precondition that complete personal is being trained is a key obligation of the organization and one of the critical factors of successful responses, especially to extreme events. Trained personnel perform their duties effectively and efficiently. This includes mastering the latest technological developments which increase regularly the organization's ability to serve the public.

5. ORGANIZATIONAL TYPOLOGY

Durable and adaptable systems and organizations allow you to adjust to unforeseen circumstances and rapid recovery. Extreme events response organization requires organizational structure, plans, technologies and personnel able to respond to contingencies. Developing a system should not focus solely on the development of the discipline through the development of plans, doctrine and procedures, but also on the agility, through the development of creativity, adaptability and improvisation which requires qualified and equipped personnel management in particular.

Factors of successful response to extreme events in the organization are not alternatives but it tends to their achievement. Individual failures such as the inability to grasp reality, lack of competence or hesitancy, appeared at all levels during the 2014 floods. Individual lapses must be separated from the organizational system errors. Observing the success

response factors comes to the four types of organizations that are created by combining the factors mentioned above (Table 1). The ability to establish creativity, improvisation and flexibility would probably be excessive and would have no success because the bureaucratic nature of response and recovery during extreme events, shows that this fear has a basis. Subjects and organizations responsible for the protection and rescue must make an effort together with the strong leadership and full trained personel to create flexibility and agility while providing structure and discipline. In terms of typology of organizations, subjects for rescue and protection should be at the level 3 (Table 1).

Table 1. Organizational typology according efficient response factors

<p>Level 1: Nonfunctional</p> <p>Incompetent Leadership Lack of discipline - a relatively unstructured, ill-defined processes and procedures Lack of agility - a relatively rigid, resistant to change and shift Unable to create repetitive and predictive processes, inflexible to unexpected events and conditions The level of training and equipping low</p>	<p>Level 2: <i>Ad Hoc</i>/ Reactive</p> <p>Flexible Leadership Lack of discipline - a relatively unstructured, undefined procedures and processes Owning agility - the ability of creativity and improvisation Weakness - Difficulties in the creation and maintenance of large organizations, difficulties in coordination with other organizations Ability to adapt to rapid changes and unexpected The level of training and equipment is relatively low.</p>
<p>Level 3: Balanced/Adaptable</p> <p>Competent leadership Possession of discipline - defined structure, clearly defined processes and procedures Owning agility - the ability of creativity and improvisation Weakness - Managers must be innovative and technically competent, difficult selection and training. Strenght - the ability of mobilization and management of large, complex organizations, the ability to quickly change and adapt to other organizations The level of training and equipment is relatively high</p>	<p>Level 4: Bureaucratic/ Procedural</p> <p>Bureaucratic leadership Possession of discipline - defined structure, clearly defined processes and procedures Lack of agility - a relatively rigid, unable to change Weakness - inability to recognize and adapt to unexpected events, the possibility of becoming "trapped" by the rules Strenght - the capacity to mobilize and coordinate large and complex organizations, capacity development and continuous training The level of training and equipment of high</p>

Problems of mass coordination of a number of organizations, governmental and non-governmental, engaged in response to an extreme event, have demonstrated all the limitations of existing leaderships and organizations as well as coordination mechanisms within the structure of the system.

6. CONCLUSION

Extreme events create a situation of great uncertainty, diversity, reduced formalization and reduced centralization while management in these situations requires consideration of several factors. Some of these factors are vital and are related to the dynamics of

situations. Due to the uniqueness of extreme events, success factors should come from different disciplines and have a specific weight from case to case. The idea of the militarization of protection and rescue system would be representing a dramatic step with historic consequences. Response to extreme events is not only saving lives but also preserving the continuity of society, which requires an agile, disciplined and competent system of responses.

Extreme events, due to its characteristics, requires consideration of a broader range of factors and constitution of a unique socio-technical system based on organizations that use their resources to protect the community in responding to extreme events. Effective response factors are those things that must be done correctly in order to achieve success. This applies to a relatively small number of areas where it is absolutely necessary to achieve success in reaching the goals of the organization. Extreme events are not simple and there is no structure that will make them such. They cause serious disruption of everyday living and require estimates and projections of creation and preparation of organizational structures that will most adequately respond to them. This fact creates the *ex-ante* reality of the need to design and organize an adequate structure for responding to extreme events before the advent of intensive *post-hoc* criticism.

Long-term discussion on the necessity to improve coordination within the system of protection and rescue and a more effective linking of organizations and establishing of efficient logistics and information system that will support them, has only just begun. Agile response of the organization was recognized by the citizens but the need to improve their capacities and that they move from the level 2 to level 3, still exists!

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ENERGY SECURITY AS A CONDITION FOR STABILITY OF REPUBLIC OF SERBIA

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Abstract:

Energy and energy sources have always represented an important source of national power and the basis on which the country build its economic and political position and prestige in the world. Modern states are faced with a lack of energy trying in various ways to provide the necessary resources to preserve the stability and social development. Energy security has become a challenge for many countries including the Republic of Serbia, who is trying to find its place under the "energy sun" in contemporary geopolitical relationships.

Key words: energy security, geopolitics, social development, alternative energy sources, critical infrastructure.

1. INTRODUCTION

Sustainable development and energy security is a strategic constant all countries which pays special attention to sustainable development as the basis for a better future. The increase in power consumption, non-renewability of natural resources and their energy intensive exploitation suggest that the key issues that will determine the future of the global economic, social and security trends related to energy security. Bidding state control of energy sources, as well as their possession and supplying, as a precondition for development, has become a key issue, which is largely grown economic framework and content has become an indispensable political and security agenda.

Direct connection of power supply and security of states and the nature of some of the real threat, have led to the issue of energy security is today one of the central issues in international relations. The crisis in Ukraine, which creates space for the "return of history" and the traditional approach to international politics, has strong repercussions on the security situation in Europe and sharpens the issue of energy security in the Eurasian space. Cancellation construction of the South Stream project has opened new uncertainties in the energy security of the countries of Southeast Europe.

The level of commitment of the European Union to considerably more actively support the efforts of countries in the region to overcome serious challenges in the energy complex opens spaces for a stronger, more coordinated and more effective regional cooperation. The Republic of Serbia, among other countries in the region, is faced with the challenges in the energy sector. Although it is often said that Serbia is West for East, and the East for West, as an important bridge to connect, in the case of European energy communication that is not so. No European, as well as regional, energy communication does not run over Serbia. Long announced the construction of South Stream, had a

historical importance for Serbia, because it would be the first time in its history, Serbia has found itself on the line of a European energy times. How questioned the realization of this project, with more and more clues as to its complete suspension in question were being brought and alternative supply routes and Serbia this important source of energy, if any, whether Serbia will, in future projections of the pipeline to be a transit country or just the end useful.

2. ENERGY SECURITY ASPECTS OF SOUTH-EASTERN EUROPE

Safety of South-Eastern Europe, particularly the Balkans, after a period of traumatic events and processes, significantly improved. Cooperation and intensification of the process of harmonization of policies and activities in the sphere of security, and other areas increases the strength of the support processes of stability and counter the crisis in the region. It is defined as an important social reconstruction and initiated a process of integration into the European and Euro-Atlantic community. The idea of European unity is especially encouraging the development of a European identity in the Balkan nations. Identifying with the European and Euro-Atlantic values opens the door to new safety practice and spread the experience of European security community.

Of course, the security of the Balkans transition from the zone of conflict in the area of long-term stability is faced with numerous challenges and problems, which is why the development of a regional security community dispute, and the whole progress is nonlinear. It is clear that the unambiguous European and Euro-Atlantic orientation of the countries of the Balkans is not a guarantee for the full stabilization and improvement of cooperation between the countries in the region, as well as strengthening the sense of community and regional identity. The complexity of many, especially the internal problems of the countries in the region, contributing to the fact that the Balkans are struggling to overcome the experience of ethical tensions, border disputes, immigration, the high number of refugees and internally displaced persons, as well as corruption and organized crime. Nationalism and obsession with the past continues to shape the social milieu of the Balkan states, which in combination with a number of other, mainly economic constraints and severe poverty and weak institutions have a negative impact on the process of modernization and creating a truly civil political society. In such a context, the process of establishing the concept of a multiethnic society, as a European concept, it is still weak and hard to achieve, but the peace that exists is not easily sustainable.

A significant limitation in the socialization process of the Balkans has a strong weakening of the global society and the growth of dangerous process of global differences, which relativize the realpolitik approach to international politics. Deterioration of relations on the occasion of the Ukrainian crisis and civil war on its eastern borders, as well as Russia's annexation of Crimea, signaling the return of the traditional principles of practicing security. Also weakening of the idea of global unity weakens the idea of multilateralism and joint action as the postmodern concept of security agencies. Also, the problems facing the European Union, in particular the global economic crisis that has hit all Balkan countries, weak strength of the European and Euro-Atlantic integration flows. In addition, the proximity of the Black Sea region, which is a dynamic and complex region where many international actors have their interests significantly reflects on the stability of Southeast Europe. Regional tensions in the Black Sea region, including NATO enlargement, anti-ballistic system, access to the Black Sea,

democratization and spheres of interest and conflict zones in Abkhazia, South Ossetia, Nagorno Karabakh and Transnistria contributing to the pronounced instability. On the other hand, close to the region of Southeast Europe, politically unstable, but energy-rich, Caspian basin offers the possibility of alternative energy routes for the supply of energy to the West.

Unequal access to resources is relatively scarce resources, monopolistic control of the market and the ability to use energy as a foreign policy tool, energy raw materials give a special strategic dimension. The practice of states, which are key players in global energy policy, using energy as an important segment of their own actions in foreign policy, limits the freedom of decision and action of an energy dependent country. When it comes to safety, the great powers demonstrate their ability and are used not only soft but also hard power in the promotion and protection of their spheres of interest, which has very serious consequences for the growth of instability and insecurity in many regions of the world.

Seen from the geo-strategic point of view, it is clear that the position of the Southeast Europe provides an important place among actors in the energy market. In fact, Southeast Europe, the northwest side, bordering with the most developed and most of the imported energy dependent part of Europe. At the same time, on the southeast side of the border with the richest energy regions - Middle East and the Caspian basin. Undoubtedly, this position of the region's countries decided in the said territory as transit areas for major energy infrastructure projects. However, only some countries, notably Turkey, have been realized in practice realized the importance of the transit countries for energy corridors.

It is clear that the use of the alleged opportunities of the regions linked to no small limit. Chronic intraregional tensions, ethnic remoteness and serious problems of economic and social instability, and the absence of firmer based regional vision, are factors which limit the reach of cooperation in the sphere of energy security in the region. The economic difficulties faced by countries in the region are a particularly powerful factor that slows down the achievements of coordinated regional energy policy. The lack of funds for maintenance or construction of new energy facilities and energy infrastructure facilities makes it difficult to finance joint projects. These circumstances represent a real danger in undermining the already difficult sustainable energy infrastructure.

For this reason the States and peoples living in this region, objective limitations is the fact that the centers of world power have different interests in the region and thus often make it difficult to establish a process of cooperation, creating a variety of impacts on regional factors. Often divergent attitudes of the great powers in terms of involving the region in energy projects and their unwillingness to fully and adequately evaluate the interests of small countries greatly complicate solving problems of energy security of the countries in the region as the interests of the highest importance. Different degree of integration of the countries of the region into European and Euro-Atlantic structures, is also a limiting factor in defining the framework of energy cooperation in the region. Very often, this circumstance creates space for the differences in the perception of the problems of energy security and ways to solve them, encouraging the processes of competition and unfair competition. In this regard the problem of slowing down the enlargement process by which a number of states and remains outside the dominant European trends, which come in a peripheral position in the decision-making process in the field of energy policy. In such circumstances, the difficulty is to define a common vision of the region in terms of improving energy security.

Lack precisely defined framework of cooperation of the countries in the region in the event of major environmental disasters and technological accidents caused in recent years by major threat 'energy production and infrastructure, making it difficult indisputable solidarity to fully be expressed in the most appropriate manner. An important question, which in a sense opened, which also limits the reach of regional cooperation is the full normative and structural harmonization energy sector in the countries of the region with EU standards¹². In this regard, the European Union should play a more active role in creating an appropriate environment.

3. THE CHALLENGES OF ENERGY SECURITY OF THE REPUBLIC OF SERBIA

Analyzing the current situation with regard to energy links and routes of energy supplies from abroad, we can conclude that the Republic of Serbia is at a disadvantage. A particular challenge with the strongest problem energy security of Serbia, but the entire region of Southeast Europe, is gas supplying. Tension between Russia and Ukraine over gas pipelines that go to supply Serbia South East Europe's gas, have opened up new uncertainties. Cancelling the start of construction of South Stream, which was believed to be a chance to improve important aspects of energy security in the region, the whole situation is greatly complicated and energy security of the region further aggravated. Now Serbia and other Balkan states should decide on ways that will ensure the supply of gas in the near future. The decision to deliver gas to final consumers should be made for a period of six months to a year. With this in mind, it is especially important determine three things: reliable delivery, the amount needed for the region, as well as acceptable and reliable prices¹³.

South Stream pipeline project was supposed to Serbia to secure entry into the European network of energy flows and the state of the end-user, make a transit country. However, the pipeline through central Balkan states for Western Europe, was seen by many as an economic-energy, as well as strategic Russia's return to the region of the special historical and traditional importance¹⁴. Suspension of the construction of this gas pipeline, as well as uncertainties regarding its alternatives, have greatly serve the energy situation in Serbia, but also throughout the region. In such circumstances, Serbia is trying to find new ways of improving their energy security. In addition, the unfavorable situation in favor of the Serbian state energy dependence on imported energy.

These data point to a disturbing energy dependence when considering some energy sources, such as oil and gas. On the other hand monitoring of oil imports is noted that the dependency rate in the period 2008-2012. year decreases, and the reason for this is to

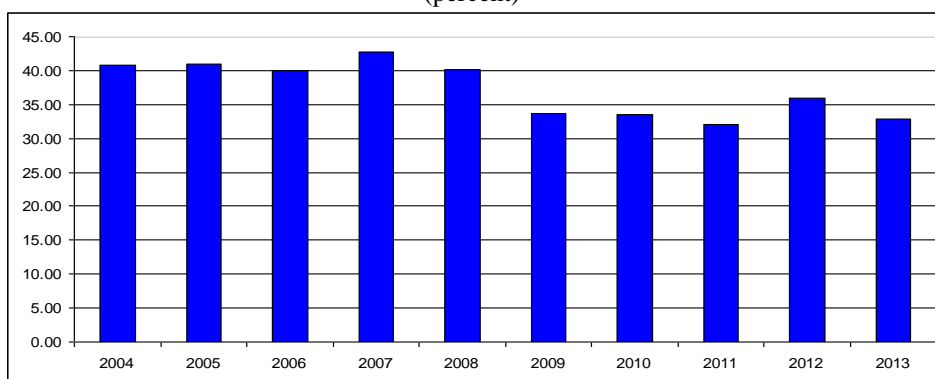
12 Serbia has made great progress in harmonizing energy sector regulations with EU standards – The progress in the energy sector refers primarily to the adoption of the new energy law and Plan for reorganization of Serbiagas which has been brought in the line with requirements of the energy community of EU

13 After the cancellation of the construction of the South Stream pipeline, Russia has indicated new opportunities for the supply of gas to the region of Southeast Europe. The new route, along with Nord Stream, will stretch through the territory of Turkey, and its final destination will be on the Grek – Turkish border. According to a preliminary agreement four pipelines will be built, the first planed in 2016. Gas will be transported through the Southern way Turkey to the border with Greece, and than Russia plane to negotiate with the EU

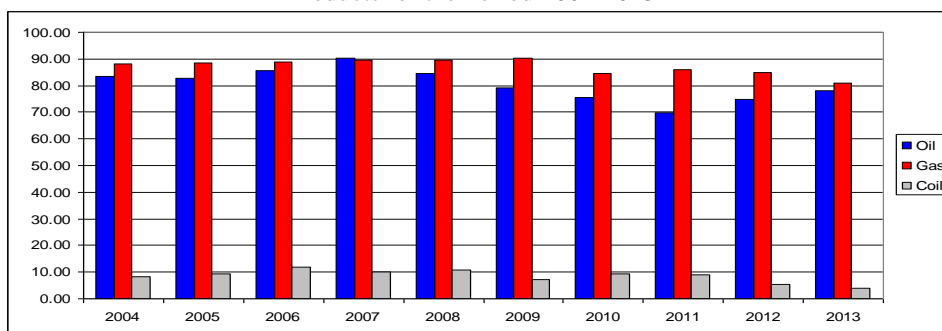
14 Djukic S.: Time Energy: Russian Gas to Europe - From Detente to South Stream, JP Official Gazette, Belgrade, 2011, p. 172

increase domestic oil production. A low rate of dependence on coal imported large its share in primary energy (over 50%) is one of the most important factors reducing the overall energy dependence which is characteristic of "technology relatively backward country."¹⁵ A deeper analysis is interesting that proven reserves of coal that Serbia has no reserves in Kosovo and Metohija¹⁶, according to the trend of consumption current provide smooth exploitation of the next fifty years¹⁷. Current estimates are that Serbia has about 20 Mtoe¹⁸ oil and gas reserves, or about 60 Mtoe of geological reserves. However, if we take into account that annually imports about 6 Mtoe of oil and gas, it is clear that these stocks do not represent a significant potential for reducing energy dependence for a longer period.

Graph 1: Energy Dependence of the Republic of Serbia for the Period 2004-2013 (percent)¹⁹



Graph 2: Energy Dependence of the Republic of Serbia in Relation to Certain Energy Products for the Period 2004-2013²⁰



¹⁵ Spatial Development Strategy of the Republic of Serbia 2009-2013-2020, p. 13

¹⁶ Exploiting estimated reserves of lignite (low grade coal) amounted to 2616 Mtoe, while the estimated geological reserves are about 3753 Mtoe. Over 76% of these reserves is located on the Kosovo-Metohija basin, with an uncertain outlook on the future exploitation, See: Spatial Development Strategy of the Republic of Serbia 2015. year, p.6-7

¹⁷ Spatial Development Strategy of the Republic of Serbia 2009-2013-2020, стр. 15

¹⁸ Mten-milion tonnes of oil equivalent.

¹⁹ See: Energy Balance of the Republic of Serbia for 2006, 2007, 2008, 2009, 2010 и 2011, 2012 и 2013. year.

²⁰ See: Energy Balance of the Republic of Serbia for 2006, 2007, 2008, 2009, 2010, 2011, 2012 и 2013. year.

In Serbia, and the holl region aswell, expressed the problem of electricity deficit, which is the result of many years of lack of investment in new production capacity. Investment cycle has been restored but the process of putting into operation of new energy facilities take. The tendency of increase in energy consumption will affect the dynamics of prices, which will intensify the social situation in the region. For example, the price of energy in Serbia has social aspects, therefore the energy capacity can not provide competitive capability in the electricity market. Electricity transmission network in the region also does not provide a reliable electricity supply²¹. There was no significant revitalization of transmission capacity and construction of new segments of the electricity transmission network, and difficult to predict environmental disasters further endanger.

In the future, Serbia will be of top importance to provide a safe, reliable and quality energy supply and energy, and reduce energy dependence of the country. The process of reducing energy dependence is complex and time consuming and requires a strategic planning. One of the ways to reduce energy dependency and use of alternative energy sources. As support for energy independence in the future of Serbia lies in renewable energy sources. However, it has not paid full attention to renewable energy sources, although it is clearly stated as a strategic orientation. In fact, only 10% of the energy in Serbia comes from renewable sources²². Absent the significant involvement of hydropower in the full extent, as well as wind energy as environmentally the cleanest ways of obtaining energy. Solar energy is not used although they could satisfy many needs, and a similar situation exists with the energy recovered from waste and biomass. Analyses show that in the countries of Eastern Europe, compared to the more developed European regions, especially by the problem of insufficient energy efficiency and irrational energy consumption. For example, energy efficiency in Serbia is 40% lower as compared to Europe²³. Due to the fact that the overall potential of renewable Serbia meet only a quarter of its annual energy needs, can not be expected that energy dependence is compensated by the development of alternative energy sources. Despite the use of alternative energy sources should not be dismissed, but on the contrary, it should be developed in parallel with other measures, such as increasing energy efficiency.

According to the strategic energy development documents of the Republic of Serbia envisages more full and effective utilization of renewable energy sources. The energy potential of renewable energy sources in the Republic of Serbia is extremely significant because nearly one third of all electricity is produced by hydro power. The technically usable potential of renewable energy sources in Serbia amounted to over 4.3 million tons of oil equivalent per year (toe). Within this amount, 63% is the share of biomass, 14% share of energy from small hydropower plants, 5% share of wind power, 14% share of solar energy and 4% is the share of geothermal energy. The total potential for energy production from biomass in the Republic of Serbia is estimated at 2.7 million tons. The potential of biomass contained in wood waste and forest residues (about one million toe) and residues from livestock farming, horticulture, viticulture and primary processing of fruit (about 1.7 million t). The potential f or energy production from biomass derived

²¹ Electricity network system of Republic of Serbia, which is in the process of revitalization - through the construction of new substations and transmission lines, managed to maintain optimum capacity for involvement in the transfer of electricity in the region.

²² The National Action Plan for Renewable Energy Sources of the Republic of Serbia, Ministry of Energy, Development and Environmental Protection, Belgrade, 2013, p. 8

²³ See: Guide to the EU-Energy Policies, European Movement in Serbia, Belgrade, 2010.

from livestock farming, suitable for biogas production is estimated at 42,000 t²⁴. These data suggest that Serbia has the potential for development of renewable energy sources, which can have positive effects on economic growth, as well as increasing the number of employees. However, in order to utilize the existing potential Serbia, it is necessary to consistent application of the legislation, and that the state take an active role of promoter and thus create a positive climate and conditions for investment in this field.

4. SCOPE OF EUROPEAN INTEGRATION AND PROJECTION OF REGIONAL ENERGY SECURITY

Former transbalkan dynamics are not in favor of the idea to establish a firmer regional infrastructure network which would significantly contribute to the establishment of a stable energy transit. Very often it was common practice to discredit regional projects. Of course, they still present a number of limitations in defining the strategic energy policy in the region and articulating their interests. At the same time, the position of the region as a trans-regional power connectors and evident hints of integrating regional energy space, open up the possibility for stronger and more coordinated intraregional cooperation in the implementation of infrastructure projects. Establishment of the Energy Community of South East Europe and the announcement of the full integration of regional energy capacity and infrastructure in the EU Energy Union, represent the framework to more effective energy cooperation in the region and their more secure energy perspective²⁵. In this sense, it is essential that the European Union within the framework of redefining the policy considerably more energy complex recognizes the potential of all countries in the region, and also, equally respecting their national needs for energy. The subject of special attention and support should be activities on the intensive development of energy networks, with a particular emphasis on the so-called regional interconnectors.

When it comes to oil infrastructure, in addition to the rehabilitation of the refineries are interesting projects related to the continuation of the existing (Thessaloniki-Skopje to Pristina and Nis) and the construction of new pipelines. The attention they deserve and all activities that affirmed renewable energy and energy efficiency. Certainly, the key aspects of the discussion on cooperation in the region by the current energy challenges, first of all priorities of the development of gas infrastructure in South East Europe and their potential impact on the stability and security of gas supply of the European Union. In this context, there is a commitment in the region to build the Energy Community, which aims to provide the necessary, safe, renewable and sustainable energy for all²⁶. It demands urgent and concrete actions that need to take into account the real financial opportunities, but also to intensify cooperation and strengthen regional solidarity much more than what it was in the previous period.

²⁴ Study on Achievements and Perspectives towards a Green Economy and Sustainable Growth in Serbia, 2012, p.32

²⁵ At the same time, the signing of the Energy Community in 2005, the Southeast European countries have provided evidence to accept the European Union directive for the internal market in electricity and gas, which have demonstrated the capacity to progress towards the highest standards of integration of European space Today is not disputed that greater cooperation, harmonization and integration of Southeast Europe in the field of energy security is relevant not only for the countries of the region, but also for the EU as a whole.

²⁶ The Energy Union that will reform and reorganize Europe's energy policy is one of the political priorities of the EU Commission.

The important issue is to define a common carrier and distribution center for the state, not only of Southeastern Europe, but also countries in Central and Western Europe. There is a strong European Union support for building a distribution center that can play a significant role in the development of the gas market in the region. An essential prerequisite for the functioning of this distribution center is adequate gas infrastructure and non-discriminatory access to suppliers and users of gas²⁷. In addition to agreeing on concrete actions to address these urgent issues, in the short term should be seen challenges of gas supply in the region and the sooner the implementation of projects. In this context, it is particularly important to continue the dialogue on the issues that will monitor the implementation of such projects, as well as the EU's willingness to find a way to under the existing financial mechanisms provide assistance in their financing and implementation.

Special importance of South-Eastern Europe for the European Union lies in the fact that it is a transit region which delivered significant quantities of energy with Central Asian and Russian regions. For transit countries lies obligation to ensure the smooth functioning of the gas infrastructure in its territory and exclusion of any kind of risk in the way of supply of energy. Because of that, it is crucial friendly and partnership relations between all parties in building the energy infrastructure of the producers, transit countries, all the way to the consumer, based on sound market principles and security. Strengthening national capacities and regional cooperation in the context of protection of critical infrastructure, ensuring that the strategies of national security and the threat to be the common goal of all countries in the region. This objective is in line with the European perspective of the countries of Southeast Europe, as well as critical infrastructure protection program of the European Union.

The protection of energy infrastructure, of accidents and damage, is an important issue of energy security. Environmental damage and economic losses from disasters, theft, vandalism and other emergency situations, exacerbated the issue of importance for the establishment of an efficient system of energy infrastructure. Therefore, the issue of protection of energy infrastructure is an indispensable part of modern security agenda and includes a wide range of different instruments, ranging from prevention to physical protection, to production, as well as transit elements of the energy complex. A particularly serious issue in the protection of the security architecture is the security of the pipeline, since the pipeline and the area around it fall into the zone of high risk. The riskiest facilities are compressor stations as high-risk production facilities, which consist of a plant for download, compression and discharge of compressed gas, and cooling gas after compression.²⁸

All this points to the need for stronger regional framework to protect the security infrastructure. There is no doubt that the subject of special attention must refer to:

- monitoring of critical infrastructure (pipelines, natural gas– pipelines, refineries, oil depots and gas, a key maritime routes and the strait);
- training in the protection of transit of energy infrastructure and storage of oil and gas;

²⁷ The first meeting of the high Level Group should take place in Sofia and should analyse the energy situation in the region and, amongst others, whether and how these conditions can be met by the creation of a gas hub in Bulgaria.

²⁸ To protect and deterrence of unlawful interference with the functioning of the compressor stations that are part of the linear production management pipeline formed security services. Determine, groups and security services provide compressor stations and linear parts of the pipeline. Compressor station is provided armed personnel and also sets the appropriate signaling (alarms, cameras, etc.).

- joint emergency plans; and
- prevention.

Because of all the above, we believe that regional cooperation is a strategic choice, because it is a necessary condition to eliminate uncertainty that accompany the energy security of all the countries of Southeastern Europe.

5. CONCLUSION

The global economic crisis has dramatically highlighted the problem of limited availability of natural resources and the struggle to preserve or conquer space rich in raw materials. The conquest of new energy sources include not only new subjects and methods of operation, but also new spaces, around which will in the future increasingly open conflict interests of the leading world powers. The overall energy trends, as well as a chronic lack of energy resources, lead to the conclusion that the demand for energy in the short and medium term perspective grow continuously, which means that the confrontation of major geopolitical player on the international energy scene in the future. Energy is a strategically important resource of any state, and therefore they trying to exercise control over its production, transport and consumption. Some countries have the ambition to achieve full control over the industry for the production and transportation of energy, thereby increasing the ability to influence many political and geostrategic issues. Russia, which is precisely due to its energy wealth in oil and natural gas, as well as their adequate management as geopolitical factor, managed to renew its global, political power, which is primarily achieved in the European continent as a third gas, Europe consumes comes from Russia Federation. Hence the greatest industrial giant Russian gas pipelines Gazprom from the Russian Federation water just to Europe. In recent years the Russian Federation of its gas exports significantly streamline and to China, which may appear as an alternative competitor to Europe for consumption of Russian energy, especially after the outbreak of the crisis in Ukraine.

Great powers have given the strategic importance of energy for decades forced to compete among themselves for power and supremacy. Namely, the possession of energy resources and control "of energy important areas" are important geo-strategic commitment to the Russian Federation, China and the United States, and many other countries. Such trends suggest that a new kind of geopolitical dependency, which is usually named as "geopolitical energy dependence." Modeling of certain events and directing certain social processes key actors of energy security may cause, create and control the crisis in certain geographic areas and encourage their political destabilization and so direct the political processes according to their own foreign policy goals.

Energy security of the European Union and the region of South Eastern Europe will have a huge impact on the stability, the overall safety and national policies of the countries. Escalation of the conflict with Russia, the European Union, although it will not lead to radicalising supplying Russian energy supplies to European countries, can have significant impacts on the energy security of the region, whose energy resources are modest. In this context, it will continue to further competition EU Member States and the Russian Federation around the route for the supply of energy to European countries, which makes more complex the political position of Serbia and other countries in the region and creates space for their polarization. However, bearing in mind that the impact of energy stability beyond the interest of each of the countries, energy security can be

seen as a strong integrating factor, with implications for mutual co-operation and security of the entire region.

This is why, in the future Serbia must make significant diplomatic, economic and every other effort to ensure that the main branch of the future gas pipeline pass through its territory. This would in perspective Serbia has become a transit country, what her next higher reliability of gas supply, ensures that this fuel purchased at a cheaper price. This role allows Serbia geographical location as an important decisive factor for decision making. However, we should not forget that the route of the future gas pipeline depends on other economic criteria, which are reflected in the number of consumers of energy that is transported, but also from the political interests of stakeholders, which can often be outside of economic logic. For these reasons, the path towards achieving this goal undoubtedly led through regional cooperation and active participation in the process of agreeing on the political and economic interests of the European Union and the Russian Federation. In addition, Serbia in the future should focus more on renewable energy sources in this segment to increase the volume of investments.

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LEGISLATION AND STRATEGIC AND DOCTRINAL DOCUMENTS IN THE FIELD OF NATIONAL SECURITY AND CRISIS MANAGEMENT

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Abstract

The Republic of Serbia has, albeit belatedly, adopted legal and strategic-doctrinal documents in accordance with modern achievements of science of security, but also to their own needs and opportunities. All of the above acts constitute a single right system on which is built the national security system that was designed with the intention to respond to modern challenges, risks and threats. Given that laws and subordinate legislation governing the operation of elements of the security system in all situations, including crisis management, as a key element of the national security system is considered to be the National Security Council (NSC). In addition to the importance of its composition, it should be noted that the jurisdiction of the NSC to the realization of the basic principles of the national security policy, especially prevention. The main issue to be discussed in the paper is an analysis of normative regulation of national security and crisis management, with a special analysis of the place and role of the NSC in the national security.

Key words: National Security, National Security System, National Security Council, Crisis Management.

1. INTRODUCTION

The security concept designed in relation to military threats was dominant throughout the period of the historical development of society from the time of ancient Greece to modern times. Of course, at the center of understanding of security in the mentioned period was the state, which simultaneously represented the basic object, as well as the subject of protection. States are, therefore, through increasing their own military power either joining or forming military alliances, tried to avoid the possibility of defeat in a possible armed conflict. Since the reflection on security referred mainly to military power, this led to the formation of behavior according to the well-known pattern of "security dilemma". It essentially represents, observed alone, the source of new competition of states for the acquisition of power, because by strengthening their own power they reduces the perception of security of other states. Thus, the state according to this concept of security felt safe only when it has achieved a balance between the potential threats and their own military capabilities that are assessed as adequate.²⁹

²⁹ Simić, D. *The Security Science*, Official Gazette of FRY, Belgrade, 2002, p. 21-24

However, the overall progress of human society, especially the development of technical and technological possibilities of the modern world, in addition to improving military threats reached a level at which the increased non-military threats to security. Because of the dramatic political and economic changes in the late 20th century, a growing number of non-military threats, the focus of security have moved from a state centric focus toward society, and the individual. Here we must emphasize that the defense against foreign danger remained one of the key determinants of the term even in the modern age. What is significantly different in consideration of security is certainly a perception of the challenges of security and are given new dimensions, which are by their nature transnational and in some cases global. It is the "old issues", such as uncontrolled population growth on a global level, with its uneven distribution, the growing gap between the rich and poor which produces constant, often uncontrolled, migration, pollution of air, soil and water, global warming, the spread of ozone holes and similar phenomena that disturb the nature balance. There are transnational threats caused by human beings, and the consequences, to a lesser or greater extent, are felt in most countries in the world. These include: international and global terrorism, transnational organized crime, corruption and human trafficking³⁰. So, that security is no longer a primary understanding of the nature of the threat, but also understanding the ways which forms and manifests security threats? This approach arose from the need to respond adequately to the increasing number of threats in the sphere of security.

Contemporary approaches to security phenomena characterized by an increased need for security behavior within which to develop and maintain the safety attitudes of individuals and groups, with the aim of developing awareness of their necessity³¹. The government as a lasting reference object of security is slowly moving from the central framework of security and his place is taken by an individual³². Changing the reference object of security consideration, there is a change of meaning of many terms that relate to security. Among these concepts, it is crucial culture of security, which is increasingly used in the extended scope, which includes the changes in thinking about security, but also the behavior in context of security. The above phrase had its foundation in the past, but now gets its full meaning by placing the individual at the center of the idea of security. Undeterred and continuous process of transformation of security caused changes in perceptions of the concept of security. Thus, the state is no longer the one and only object of interest for the study of the security science. Her place was taken by international organizations, national and international non-governmental organizations, national minorities, various professional and interest groups, which bring together and articulate the most numerous security factors or individuals.³³

As the number of reference objects of security multiplies, the interest in security culture increases, the content of the term multiplies and becomes more complex. In addition, imposition of construction of the security culture to educate and bring up only a nation in the area of security is no longer adequate, but it is necessary to do so with each individual. In this context should be considered and efforts to deal with the security

³⁰ Ibid, p. 38.

³¹ Gleick H. P. Global water: Threats and Challenges Facing the United States, *Environment*, **Vol. (43)** No.2, 2001, p. 18-26

³² Nye Joseph S. Jr., *Understanding International Conflicts*, Fourth edition, (Foreward by Stenley Hoffman), Longman, New York, 2003, p. 2.

³³ Ibid.

culture and the education of individuals, while simultaneously developing cohesive elements that include local, regional, and international levels.

That it is not just about theoretical considerations with questionable results is indicated by actual security practice? The internal conflicts and wars are companions of human society throughout history, but never before was that company in a higher level of technological development. This fact points to the greater number of security threats causes derived from dysfunctional technical and technological systems or disturbances in the natural balance made by human activities. An illustrative example of above mentioned tendencies is the hurricane Katrina which at the end of August 2005 hit the southern parts of the United States. Natural disaster has caused great casualties and material damage, but also enhanced the level of crime as a consequence of inefficient work of state authorities in the circumstances. All this resulted in the declaration of a state of emergency and the engagement of the army and the National Guard in the aim of restoring public order. If it is known that the United States have one of the most developed systems of national security, failure to effectively operate further cautions and actualize this issue. This example is illustrative point to the fact that the scope of the term security phenomenon necessarily expanded with new contents, covering all aspects of the modern conception of security, taking into account the appearance of new ways to compromise security, including natural catastrophe that are equally a source of threat as conventional war or terrorism.³⁴

The special status in contemporary security is consideration of the relationship of thinking and practicing security and freedom of the individual or specific parts or society in general. Specifically, the question is how much each individual is willing to give up their constitutionally guaranteed freedom to feel safe and vice versa. A controversy in the development of future relations in the modern world represents the harmonization of the relationship between security and freedom. Precisely, the supreme value of the ideal that applies to the present concept of the development of the most of world societies is individual freedom. This is the same concept that has been used for the collapse of the communist ideology, which left no room for the emancipation of human freedom. If freedom is the absence of life without restrictions and prohibitions, it is necessary to identify all forms of freedom that are dangerous and determine ways to protect themselves from them. That is, it can be key determinants of how to create enough security, which, in the end, just enjoy the maximum guarantees freedom of individuals.³⁵

On the other hand, many phenomena of human, natural and technological origin greatly contribute to the achievement, enjoyment, development and protection of the values and interests. Therefore, the most modern security theoreticians opt for a broader view of the definition of security, which means any occurrence (subject, action, event and / or condition) that performs a positive or negative impact on the safety or being sheltered on the reference values of the individual, society, state, and often refers to the entire international community.³⁶

It is clear that environmental change as well as various technical and technological and hydro meteorological hazards have a great effect on the individual and on society and to state centered national security did not provide the necessary systemic responses to the causes and consequences of various accidents. The "narrow" national security based on military threats not considered all sources of threats to individual and society as a hole,

³⁴ Mijalković S. *National Security, Second, Revised Edition*, Police Academy, Belgrade, 2011, p. 37.

³⁵ Keković Z. *The Theory of the Security System*, Faculty of Security and Protection, Banja Luka, 2009, p.

³⁶ Mijalković, S. *National Security, Second, Revised Edition*, Police Academy, Belgrade, 2011, p. 37.

remains incomplete and therefore only covers up the problems. The development of modern security means is placing the individual at the center of security thinking and acting radically changed the perception of security. Due to the increased number of accidents, the number and consequences, there is a mass migration of the population, which does not represent a mere displacement of the population, but also cause serious social and political character³⁷. Human security is a new framework for observation of security in terms of determining all possible threats to man and his community. It is unacceptable to management applicable only to short-term threats and serious military threat, but also to structural factors and risks that very often begin suddenly and develop rapidly.³⁸

2. THE SYSTEM OF NATIONAL SECURITY

Most scholars in determining the security of the term, comes exactly from systems theory³⁹, according to which every phenomenon in nature or society in its totality can be seen as a harmonious system that consists of a series of occurrences or subsystems, which are using the unique functions and organizations connect to the system.⁴⁰

According to one of the many classification systems can be: natural (human, solar system, etc.), technical and organizational (security, education, economic ...). Of the others, organizational systems differ in that they are created by people to satisfy their own needs. In this respect, the system in organizational terms represents a set of different elements which function as a coherent whole and all in order to achieve a certain goal⁴¹. Thus, the concept of the system includes the following mandatory elements: set the goal for which there is a system; forces and means for achieving the above objectives; structure of system elements for the realization of certain activities; expensive activities which this goal can potentially achieve and functions of the structural elements in order to achieve objectives.⁴²

The security system, like any system, is in fact the thought structure of a real object. The real object which is expressed in this system is state functions. Therefore, the security system can be defined as an organized social system through which society organizes the protection of its vital values with the aim of progress and development of society.⁴³

Furthermore, modern democratic societies organize security systems to protect their fundamental values and to maintain favorable security situation that allows them to survival and further development in all other segments. Basic values to be protected and

³⁷ National Intelligence Council, *Global Trends 2015, A dialogue About the future with Environmental Experts*, Washington, D.C, 2000, Centra Intelligence Agency

³⁸ Brown, N. (1989), *Climate, ecology and International Security*, Survival, Vol. 31, No.6, 519-532

³⁹ System (Gre. *systema*) what is unified, composition, continent; to a certain view of the beach and a variety of things or information made whole, a set of ordered parts, for example. form of organization and management of the company; management mode. Quoted from: Vujaklija, M. *Lexicon of Foreign Words and Expressions*, Prosveta, Belgrade, 1980, p. 849.

⁴⁰ Compare with: Ivančević N. *The Security System of Yugoslavia - Introduction to the Theory of Integral System of Security*, Defense and Protection Faculty, Belgrade, 1993, p. 29-33.

⁴¹ Stevanovic, O. Subošić D. *Organizing Systems With Special Emphasis on Security Systems*. Taken from Keković, Z. (Eds.), *Systems Security*, Faculty of Security Studies, Belgrade, 2007, p. 15 (pp. 13-28).

⁴² Keković, Z. *The Theory of the Security System*, Faculty of Security and Protection, Banja Luka, 2009, p. 73; Kovacevic, S. *Basics of Security and Defense - Selected Lectures*, Police College, Belgrade, 1996, p. 54.

⁴³ Keković, Z. *The Theory of the Security System*, Faculty of Security and Protection, Banja Luka, 2009, p. 139.

which at the same time make content security features of modern state, are primarily: to protect the sovereignty and independence of states; protection of the rights and freedoms of its citizens; protection of public order; protection of personal and property of citizens, as well as environmental protection.⁴⁴

The security system includes organs and measures, implemented activities and the activities carried out in order to protect certain social values determined primarily by the Constitution, but also by the relevant legislation. Essentially it is a way of organizing the state, which aims to protect the country from all sources, forms and types of hazards, and ways of action for the protection of fundamental social values, and other forms of threats.⁴⁵

Access to security, as a system, is based on previous determinations of security functions, organizations and conditions. In addition, functions and organizations make the action level of the term, which includes entities, their activities and funding. At this level of security given to answer the questions: who is acting, in what way, by what means, with what purpose, and the security situation is its product, i.e. the answer to the question of what we get, if we wanted, what we lost? In other words, the security system is more coherent functioning of the security organizations that perform specific subfunctions of security, which results in a certain state of security.⁴⁶

Thus, the security can be regarded as a system or as a harmonious unit capable of functioning independently in a certain time and space surroundings. As such, the security system is composed of multiple horizontally, vertically and diagonally related subsystems, i.e. sectors that perform specific activities, unique security features. The ultimate goal of these activities is the smooth attainment and enjoyment of a particular security situation, sheltered and comprehensive reference values and interests of endangering any species, including humans, as a source of threat to security to natural disasters or accidents.⁴⁷

The main function of the security system is a preventive, which in general is an instrument of deterrence, and if you still do undesirable activity occurs, the system must react vigorously, i.e. repressive - eliminating the causes of hazards and eliminating their holders to legally permitted manner. It is clear that prevention is more related to the human factor as a source of threat to security, but also to the sources of danger which can be caused by nature. This is supported by a long tradition of building dams, as a preventive measure to protect people from flood waves.⁴⁸

If the security system achieved its function across multiple types of activities, then it is divided into as many subsystems as there are types of activities because, as a rule, for each form of activities organized by special forces and means, while each of them has its own rules, standards, etc.⁴⁹

Thus, within a single security system, which its general function by a variety of activities, has as many sub-systems, and security sector how many of these activities, for example, police subsystem⁵⁰, intelligence and security subsystem⁵¹, the system of protection and

⁴⁴ Compare with: Masleša, R. *Theories and Systems Security*, Magistrat, Sarajevo, 2001, p. 100.

⁴⁵ Mitrović, Lj. and Pavlović G. *System of Security of Bosnia and Herzegovina - the Legal Aspects of the Current Situation*, The International Association of Scientific Workers - AIS, Banja Luka, 2012, p. 21.

⁴⁶ Mijalković, S. *National Security, Second, Revised Edition*, Police Academy, Belgrade, 2011, p. 58.

⁴⁷ Mijalković, S. and Keserović, D. *The Basis of Security*, Faculty of Security and Protection, Banja Luka, 2010, p. 50.

⁴⁸ Keković, Z. *The Theory of the Security System*, Faculty of Security and Protection, Banja Luka, 2009, p. 140.

⁴⁹ Vejnović, D. and Šikman, M. *Defense Studies*, Police College, Banja Luka, 2007, p. 385.

⁵⁰ See more in: Nikač, Z. Police subsystem security system in Keković, Z. (ed.), *Systems Security*, Faculty of Security Studies, Belgrade, 2007, p. 79-95.

rescue, private security⁵² and others. Due to this, it can be safely argued that the system of protection and rescue is one of the subsystems in the security system of each country. Protection function implemented by the security system is realized through a multitude of its characteristics of which are inherent only to him, as a complex and regulated state system. Its operation, as a rule, implemented in adverse conditions as a result of significant mutual antagonisms objectives of the security system of a modern state and a source of threat. Their work is characterized by constant changes in the structure of the security system and the manner of their operation, which further complicates their engagement. In addition, we should add the certainty that the danger is almost never respond identical methods, means, because neither security triggers are almost never able to cause identical security risks.⁵³

One of the major characteristics of the security system in modern states is their hierarchical arrangement, similar to military systems. The need to regulate in this way the security system, among other things, a consequence of the variety of security threats, and thus the entities that oppose them. This stratification of elements at multiple levels necessarily leads to the organizational principle where the dominant relationship is of subordination. Such an arrangement allows bringing the minimum of control elements, with the highest level has the ability to control and insight into the overall effects and consequences of management. The hierarchical arrangement does not eliminate the effect of lower levels in defining certain management operations, a higher level, as it is often considered. On the contrary, higher levels of decision-making on the basis of a general nature pertaining to the regulation of the functioning of lower levels. On the other hand, lower levels of decision-making have the right, indeed the obligation, to propose the measures and procedures for superiors who would ensure their efficient and rational operation.⁵⁴

The National Security Strategy of the Republic of Serbia is among the challenges, risks and threats to security, among others, included the important aspects of the excessive consumption of natural resources, causing environmental pollution. It was previously related to excessive exploitation of forests, arable land and sources of drinking water, uncontrolled disposal of energy resources, pollution of air, waterways and soil and uncontrolled waste disposal. In addition to irreparable material damage such actions can obtain adverse changes in macro and micro climate. This leads to the occurrence of natural disasters, such as floods, droughts, global warming and the similar natural disasters.⁵⁵

Uncontrolled functioning of the human factor leads to the consequences of natural disasters and technological accidents, as well as to the environment and health of citizens due to radiological, chemical and biological contamination. They represent a continuing security risk for Serbia, its population and material values. Significant risks are technological accidents in which the effects of hazardous substances can influence not only the territory of the Republic of Serbia, but also neighboring countries. Further endanger the environment and objects with a high degree of risk in the region, as well as

⁵¹ See more in: Bajagić, M. Intelligence and Security System of the Republic of Serbia, in Keković, Z. (ed.), Systems Security, Faculty of Security Studies, Belgrade, 2007, p. 97-117.

⁵² See more in: Pavlovic, G. *The Right of Private Security* - a Comparative Study, Center for Security, Sociological and Criminological Research, Banja Luka, 2011.

⁵³ Rakic, M. and Vejinović, D. *Security System and Social Environment* - the Theoretical and Conceptual Aspects of the Security System, Banja Luka, 2006, p. 83-94.

⁵⁴ Ibid, p. 80-82.

⁵⁵ The National Security Strategy of the Republic of Serbia, Defense Media Center, Belgrade, 2009, p. 12

industrial facilities with technology that does not meet international environmental standards or the possibility of damage to the said installations.

Risks associated with the emergence of new infectious diseases in humans and infections in animals and their expanding pose a security risk. This danger might in the future be more pronounced, given the growing trend of migration of people and goods.

The existence of the growing awareness of the need to legislate listed area in the Republic of Serbia resulted in the adoption of the Law on Emergency Situations⁵⁶, defining the declaration and management of emergencies; organization of protection and rescue of people, material goods and environment from natural disasters, technical and technological disasters, or accidents and disasters caused by terrorism, war damage and other disasters; the competence of the state bodies, autonomous provinces, local governments, if and involvement of the Police and the Serbian Armed Forces in the protection and rescue; the rights and duties of citizens, companies, other legal entities and entrepreneurs in connection with emergencies; organization and activity of civil protection in the protection, rescue and elimination of consequences of natural and other disasters; financing; inspection of the delegated tasks; international cooperation and other issues of importance to the organization and functioning of protection and rescue system. Big floods, which occurred in most of the Balkan region in May 2014 and the engagement of state institutions and the whole society in the rescue of people and material goods, have shown some weaknesses in the organization and functioning of protection and rescue system. The state authorities of the Republic of Serbia have taken measures aimed at analyzing the operation of the emergency and the abovementioned analysis arisen certain conclusions that are operationalized in the form of the Draft Law on Amendments to the Law on Emergency Situations. Adopting the above legislation is expected to more efficient regulation of protection and rescue system.⁵⁷

3. OPTIONS NATIONAL SECURITY COUNCIL IN THE PREVENTION OF EMERGENCY SITUATIONS

The System of National Security of the Republic of Serbia, as already noted, hierarchical and top management structure of the National Security Council. The Law on the Security Services⁵⁸ in the Republic of Serbia established the Council for National Security, which has considerable competence in the fields of defense, internal affairs, directing the work of the national security intelligence system, mutual and international cooperation of state bodies in charge of defense, internal affairs and security, as well as other issues related to the preservation and improvement of national security⁵⁹. It is clear that the National Security Council has a major impact on the issues of creating and implementing security policies, both domestic and foreign affairs. Permanent members of the National Security

⁵⁶ Law on Emergency Situations, Official Gazette of the Republic of Serbia No. 111/09, 92/11, 93/12.

⁵⁷ Law on Emergency Situations, Official Gazette of the Republic of Serbia No. 111/09, 92/11, 93/12, Article 1.

⁵⁸ The Law on the Security Services in the Republic of Serbia, Official Gazette of the Republic of Serbia, No. 116/2007.

⁵⁹ See more in: Rakic, M. and Vejinović, D, *Security System and Social Environment* - the Theoretical and Conceptual Aspects of the Security System, Banja Luka, 2006; Simić, D. The Science of Security, Official Gazette of FRY, Belgrade, 2002; Stevanovic O. *Security Management*, Police Academy, Belgrade, 2012; Bajagić, M. *International Security*, Police Academy, Belgrade, 2012; Stevanovic, M. and Isakov, S. Comments Law on the Security Services of the Republic of Serbia with attachments, Civil Institute for Democracy and Security Parallax, Belgrade, 2008;

Council are: the President and Prime Minister of the Republic of Serbia, Minister of Justice, Defense and Interior, Chief of General Staff of the Serbian Army, director of the Security Information Agency, Military Security and Military Intelligence Agency⁶⁰.

The National Security Council has a basic function that directs and coordinates the involvement of the security services which is realized through the following activities: consideration of intelligence and security assessments and adopting decisions defining the priorities of engagement of the national security, direct the work of the security and intelligence services, as well as the Bureau for coordination, focus cooperation of security services with similar services of foreign states and international organizations, the adoption of conclusions which aligns activity of state bodies that are dedicated to international cooperation in the field of national security and defense; monitoring the execution of its own conclusions, giving opinions on the proposals of annual and medium-term plans of the security services. Furthermore, by providing opinions to the Government on the budget proposals of the security services, follow the implementation of the approved budget funds and the government gives its opinion on the proposal for the appointment and removal of directors of the security services. Also, be responsible for the application of regulations and international standards for the protection of personal data and other regulations that protect basic human rights may be violated exchange of information or other operating activities.⁶¹

The National Security Council was established following the adoption of the Law on the Security Services in the Republic of Serbia and with the legal framework by which it is established can be observed and certain ambiguities and potential dysfunctions⁶². At the same time, there are authors who dispute the justification that the formation of such an important state body is realized on the basis of the said legislation. They believe that because of the importance of competence by performing, but also the level of government officials who are engaged, it should be regulated by constitutional norms. That was not the case, and even failed to bring any with the Law on the Government and Law on Ministries.⁶³

Despite the above, the formal, concerns regarding the formation of the National Security Council, is an indisputable fact that it is a very useful and functional state body, which solves the fundamental issues related to national security. However, the question is how its current jurisdiction in accordance with modern security challenges, risks and threats that have already been discussed. We believe that it would be rational and functional to the jurisdiction of the National Security Council extend to areas that are related to the sources of security threats that are caused by the action of natural disasters and technological accidents. The essence is in the fact that our legislation the National Security Council, to a large extent, focused on the external threat, perceived the classical conception of security and therefore not in line with modern security challenges. On the other hand, it is the body in which they are engaged President, the Prime Minister and some of the key ministers whose authority and competence can be rationally utilized. This primarily relates to the extension of the jurisdiction of the National Security Council in the process of mid-term and long-term plans for development of the system for

⁶⁰ The decision on the National Security Council of the Republic of Serbia, The Government of the Republic of Serbia No. 02-2866 / 2007 of 31 May 2007.

⁶¹ Mijalković, S. *National Security*, Second, Revised Edition, Police Academy, Belgrade, 2011, p. 291.

⁶² The Law on the Security Services in the Republic of Serbia, Official Gazette of the Republic of Serbia, No. 116/2007, Article 3.

⁶³ Stevanovic, M. and Isakov, S. Comments Law on the Security Services of the Republic of Serbia with attachments, Civil Institute for Democracy and Security Parallax, Belgrade, 2008, p. 23.

protection and rescue of the Republic of Serbia, but also the long-term implementation of concrete projects that focus on preventive action in the field of humans and material goods that are determined as a priority. Therefore, it is the identical obligations to the National Security Council had the system of protection and saving and the National Security System, and a similar methodology engagement which would mean that a part of the abovementioned tasks could be performed already employed in the said body.

For the introduction of those changes to the burst of the Council for National Security are already redeemed legal basis. This is particularly seen in the already prescribed jurisdiction and in the part which states that:

- Consider issues related to defense, internal affairs and the security services. Since the Department for Protection and Rescue organizationally structured within the Ministry of Internal Affairs, it is clear that that area may be the responsibility of the National Security Council;
- Proposes the relevant state authorities measures to improve national security. It is clear that this definition does not limit the scope of the jurisdiction of the National Security Council;
- Consider issues from the scope of the jurisdiction of the state administration, autonomous province and local self-government and the cities of importance to national security. This guideline are created possibilities that the National Security Council achieve concrete cooperation with local authorities in order to monitor the implementation of a specific project to act preventively in the field of security of people and goods; and, what is especially important
- Examines other issues of importance to national security, which practically created the legal basis for the involvement of the National Security Council in a broad spectrum of security challenges, risks and threats to the security of people and goods.⁶⁴

Of course, it is important to be added the fact that the positive law system of the Republic of Serbia and predicted the obligation of all competent state bodies to cooperate with the National Security Council in accordance with its constitutional and legal position. It is crucial to highlight obligation of public authorities to execute conclusions of the Council for National Security. In this sense, stipulates the obligation of the Secretary National Security Council to promptly report to the Council in the event that the head of state authority does not implement its conclusions.⁶⁵

Although it is not always advisable to compare any applicable legal solution of foreign countries due to the different constitutional systems and political culture of the nations, it should be noted, in our opinion good practice of the Czech Republic. Council for National Security in the Czech Republic⁶⁶ is a permanent body of the Government, which is responsible for coordination in the field of security and the preparation of draft measures to ensure the security of the state, its citizens and goods. The National Security Council was established on the basis of the Constitutional Law on the Security of the Czech Republic. Members of this body are the prime minister, the ministers of defense, interior, foreign affairs, European affairs, finance, industry and trade, transport and health. A special feature of the National Security Council of the Czech Republic presents its organizational structure, which consists of four standing committees to coordinate:

⁶⁴ The Law on the Security Services in the Republic of Serbia, Official Gazette of the Republic of Serbia, No. 116/2007, Article 5.

⁶⁵ The Law on the Security Services in the Republic of Serbia, Official Gazette of the Republic of Serbia, No. 116/2007, Article 13.

⁶⁶ <http://www.National Security/Government of the Czech Republic>

external security policy, defense planning, Civil Emergency Planning Committee and reporting. The committees are responsible for finding solutions to the crisis and other serious security risks and threats that concern the security interests of the State and its citizens.

It is believed that the introduction into practice of the National Security Council of the Republic of Serbia following the example of the Czech Republic contributed to centralization, a long-term planning and implementation of projects of protection and rescue and emergency management in Serbia. What can be considered problematic is the fact that the National Security Council of the Czech Republic in government linked to the government, and the Republic of Serbia in the work of the National Security Council included the President of the Republic. We believe that it is not a legislative obstacle to their experience take over in Republic of Serbia. On the contrary, we believe that the fact that the authority of the National Security Council of the Republic of Serbia increased, bearing in mind the fact that the president is elected in direct elections and thus has more political weight.

4. CONCLUSION

The security concept designed in relation to the military threat was dominant throughout the period of development of international society since the creation of the first state system to the post-Cold War period. In the center of the security consideration was the security of the state, while the issues of security of individuals and property were considered second-rate. Termination of the threat of conventional or nuclear war opposing military and political alliances has made it possible to think about safety extended to individuals, groups or regions.

At the same time, most modern security theoreticians believe that many phenomena of human, natural and technological origin greatly contribute to the achievement, enjoyment, development and protection of the values and interests. Therefore options for a broader view of the definition of security, which means any occurrence (subject, action, event and / or condition) that performs a positive or negative impact on the safety or the sheltered reference values of the individual, society, state, and often applies to the entire international community. That is increasingly talking about common security risks that threaten many, if not all, countries in the world. It is about climate change, international terrorism, transnational organized crime, natural disasters, human trafficking and drugs and the like. It is clear that environmental change as well as various technical and technological and hydro meteorological hazards, have a great effect on the individual and on society, and state centered national security did not provide the necessary systemic responses to the causes and consequences of various accidents.

In line with modern security challenges, risks and threats it is necessary to conceive the national security system, which has the function to ensure the personal security of individuals and their property, as well as overall survival and development of the state and society. It is clear that the new system of national security raises a host of new tasks, which previously did not belong to this area of the state bodies which are dealing with those issues.

One of the major characteristics of the security system in modern states is their hierarchical arrangement, similar to military systems. The need to regulate in this way the security system, among other things, a consequence of the variety of security threats, and

thus the entities that oppose them. This stratification of elements at multiple levels is necessary to focus on the organization as the dominant relationship of subordination and closer cooperation among the elements of security system.

Because of all this we can say that shifts surprising lack of practice of the National Security Council of the Republic of Serbia deals with issues related to modern security challenges and threat risks. The Council main function is to guide and coordinate the involvement of the security services, which in modern theoretical framework can be considered quite restrictive approach practice of confronting nowadays security risks and threats. Although one should not belittle listed and state-centric risks and threats, we believe that the introduction of the practice on the involvement of the National Security and the protection and rescue could rationally or efficiently utilize capacity, the authority of the Council. Thus, the National Security Council of the Republic of Serbia, in addition to conditionally speaking, classical competence to monitor intelligence and security assessments external and internal threat to national security, the adoption of decisions on the priorities of the national security of engagement and directing his work should deal with the issues of personal and collective security, which are being threatened by natural disasters, technological accidents and the like. This primarily relates to the extension of the jurisdiction of the National Security Council in the process of verification of medium and long-term plans for development of the System for Protection and Rescue, as well as the long-term realization priority projects in the field of people and material goods. Of course, the National Security Council of the Republic of Serbia need to have the focus of engagement on preventive action protection and rescue system, its organizational and functional arrangement and creation of conditions for strengthening the System in coordination with economic and other legal entities that operate in the territory of the Republic of Serbia.

A good example in this regard may constitute the arrangement and jurisdiction of the National Security Council of the Czech Republic, which is organized like the scope of work specified state bodies. At the same time, and the present legislative solutions do not prevent the establishment of such a practice in the Republic of Serbia. So, it remained to acquire the political will and understand the importance of long-term and systemic approach to issues of organization and functioning of Protection and Rescue System and the benefit that this involvement could provide, bearing in mind the importance and capability of officials who are sitting in the National Security Council of the Republic of Serbia.

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AVAILABILITY OF INFORMATION ABOUT CIVIL DEFENSE ON WEB-PRESENTATIONS IN BOSNIA AND HERZEGOVINA

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Abstract: Development of the Internet in BiH is on the rise and almost 57% of the BiH population uses the Internet. Internet is increasingly used also as a primary source of information. This paper, by analyzing the contents of all official existing internet presentations of municipalities in BiH and the Internet web sites of Administration of Civil Protection of entities and cantons, showed that the availability of information about civil protection in BiH at all levels is very limited and that there is a need to improve the presentation of Civil Protection on the web sites.

Key words: Civil Protection, Bosnia and Herzegovina, internet, presentation, local administrations, administrations

1. INTRODUCTION

According to the research from 2012, Internet and TV were most important media to the youth in Bosnia and Herzegovina (BiH) and they use them to get 88,6% of all information.[1] The Council of Ministries of BiH issued Policy, Strategy and Action plan for Society information development in BiH in November 2004. The Strategy envisaged the formation of e-government (The Council of Ministries of BiH, entities and cantonal governments, ministries and local governments) until 2010, in order to achieve democratization of society, transparency and promotion, and sustainable development of society. Realization of that Strategy was predicted through big amount of the projects and among them was project called “e-mail service in public administration”. Unfortunately, this project, and many other among them, were not realized and it was leading to the new Policy for the period of time, until 2020. Moreover, development of BiH in the area of internet networking is visible from the World Global Information Technology Report 2015 where BiH made progress from position 110. in 2010 to position 68. in 2014, but for 2015 BiH didn't send information for analysis. However, results for IT development of society in BiH are just over world's average and far below standard of developed countries in Western Europe, and BiH is at the penultimate position in Europe in accordance to the index of IT development for 2013.

Researches in BiH are showing that 80,58% of municipalities in BiH in 2012 were “partially transparent” and just town Banja Luka in BiH was graded as “transparent”, and other municipalities were assessed as “not transparent” or “especially not transparent”. [4] Bearing in mind that the citizens and municipalities in BiH are main holders of protection and rescue system, all key information about civil protection, contacts, plans, organization and structure have to be available to all citizens in time of contemporary IT, and that should be available on the internet.

2. AIM

The aim of this paper is to show that availability of information about the Civil Protection in BiH is not on the desired level in the internet presentations of municipalities which are main holders of protection and rescue system in BiH, as in Federation of BiH (FBiH) and in Republic of Srpska (RS).

This research implies an analysis of the current situation of data availability on civil protection websites of municipalities with analysis of the websites of the Civil Protection Administration in the RS and FBiH and the cantonal administrations of civil protection in the FBiH. On the other hand, analysis of those websites will enable the directing of activities of municipalities to improve their websites and to make the data and information, related to the protection and rescue, transparent and accessible to all citizens in the fastest and most transparent way. In the critical situations, time is very important and information should be at your fingertips, so that reaction would be as fast as possible. Here will be highlighted that on the websites of municipalities some information are missing which are of essential importance for the function of protection and rescue system on the level of municipality.

3. METHODOLOGY

Using method of content analysis in period of time from May to Jun 2015 I managed to do research of all official websites of BiH municipalities, 136 of them and Brcko District BiH.

From all of municipalities in BiH (142 municipalities) just seven of them (5 in RS and 2 in FBiH) don't have official website.

Analysis was done using answers on twelve questions in the three areas, as they are:

- Overall picture,
- Availability of civil protection on website,
- Availability of the documents of civil protection.

Research also was done on website of Republic Administration of Civil Protection of Republic of Srpska (RACP), Federal Administration of Civil Protection of Federation of BiH (FACP) and on website of Cantonal Administration of Civil Protection in FBiH (CACP) and it means three website of CACP from ten, because other CACP (seven of them) do not have its website.

Analysis of those Civil Protection Administrations was done using method of content analysis of existing official websites in accordance with little bit simplified categories given by Helen Darbshire, which public institutions should make available to the public.[2] In accordance with that, those Administrations were analyzed from the point of:

- Contact information (to the administration, to lower structures, guide for information availability);
- Information about the heads of the administration (name, phone, e-mail, CV, job description);
- Existence of job description of the administration;
- Law regulations of the administration work;
- The decisions and acts issued by the administration;
- Information on the budget (budget, budget execution reports);

- Existence of the Plan for the work (plans, reports of work);
- Existence of audit reports.

4. RESULTS OF RESEARCH

Results from the research are:

Websites of Administrations of Civil Protection exist at the entity level but key documents for the work of Administrations are missing.

Just three for ten CACP have official websites.

95% of municipalities in BiH have official website.

In BiH, 57% websites of municipalities have a special page dedicated to civil protection, of which only nine websites of municipalities in RS (15%) contained a special page dedicated to civil protection while in the FBiH it is 48 municipalities or 62%. It influenced that in RS only 38% of websites have contact information related to civil protection while in FBiH 79% of websites of municipalities have that kind of information. Moreover, in the RS only 17% of websites of municipalities contains information on civil protection responsibilities while in the FBiH it is 74% websites of municipalities. At 87% of websites of municipalities in BiH information about the leaders of civil protection, consists nothing more than the names and contact information (no CV or job description).

In 93% of cases on the websites of municipalities in BiH there are no instructions on the actions of the population in case of natural or other disasters, while 97% of websites of municipalities do not consist vulnerability assessment of natural or other disasters. The Plan for protection and rescue from natural and other disasters on its website do not have 96% of municipalities. List of members of the Civilian Protection Staff / Headquarters for Emergency Situations and Civil Protection Commissioner, on the website of municipalities, do not exist except in one municipality.

5. ANALYZE ON THE LEVEL OF ADMINISTRATIONS

System of protection and rescue in BiH is based on entities (RS and FBiH), and Brcko District of BiH has special status. There is Ministry of Security at the level of BiH which has coordinating role through its Sector for Protection and Rescue. However, system of protection and rescue in RS has administrative part of system at the entity level (RACP is integral part of Ministry of Security of RS) and operational part at the municipality level. In FBiH system of protection and rescue also has administrative part at the entity level but also at the level of the cantons. A highest administrative authority in FBiH is FACP (direct under authority of FBiH Government), next are CACPs and at the end are municipalities. The CACPs have broad powers and they issue laws on its level including laws about civil protection or protection and rescue.

So complicated system of protection and rescue in BiH consist a bunch of regulations, rules, instructions and other documents, and it make harder work on the lower level (members of civil protection at the level of municipality). Taking under consideration that all citizens, age from 18 to 60, are members of civil protection, there is need that they get all necessary knowledge about its duties and Plans in case of natural or other

disasters. At the time of modern communication technology, the internet represents one of the most universal media and in area of civil protection, too.

5.1. Republic of Srpska

There is RACP at the highest level of RS and it has official website. In all municipalities in RS civil protection exists. Analyzing that website of RACP it is obvious that there are information how to contact with RACP, information on the scope of the work, information how to contact all Regional sections of RACP (Banja Luka, Doboј, Bijeljina, Istocno Sarajevo, Trebinje), but just telephone numbers, no e-mails for Regional sections of RACP. Direct contacts to municipality civil protection don't exist but there are links to websites of municipality. There is not contact list with civil protection services in municipalities. Such kind of the list were on website of RS Government during flooding in 2014, but same list doesn't exist on website of RACP. Here should be highlighted that more attention have to be given to presentation of Regional sections of RACP, its structure, organization and the scope of the work.

On the website of the RACP there is the organizational structure and the list of laws and other regulations in the field of protection and rescue, which can be viewed, among which is a significant Threat Assessment of natural and / or other disasters for RS as well as Plans for protection and rescue in case of floods, snowfall and large fires. On this website you can find a list of the members of Headquarters for Protection and Rescue in RS but also the organization and structure of specialized units in RS for demining which is the only specialized civil protection unit at the RS entity level.

It should be noted that on the website of the RACP is a guide to access information, so that those who want to know more about the work of RACP can get information by filing a request for information access.

In addition to all this, on the website of RACP there is not enough information on all managers except for the Chief of RACP. For other members and heads of departments, sectors, etc., are provided just phone numbers and e-mails. In addition to that, the website of RACP doesn't consist Working plan for RACP and Analysis of previous working plan of RACP. Data concerning the budget of the RACP as well as Reports on budget for the previous period also are missing on the website of RACP. In addition to that audit reports of the RACP are missing, too.

By placing the above documents to the website of RACP, setting the list of contacts with the local civil protection services and regional departments of RACP, including e-mails, transparency of RACP would be much higher.

5.2. Federation of BiH

In FBiH in all ten cantons were formed CACP. In all municipalities in the FBiH were formed civil protection sections, and in 16 of the 79 municipalities civil protection service is a part of the other municipality services.[3] At the level of FBiH, as noted, there is FACP that has a website, while only three of ten CACP have their own website (Canton Sarajevo, Zenica-Doboј Canton and Tuzla Canton), which is disappointing in accordance to the importance and function of CACPs. On the other hand, only on the website of FACP there is a instruction to information access.

Analyzing those websites at the level of FBiH and cantons, all four have:

- Contact information for Administrations;

- Contacts to the civil protection sections of municipalities except on the website of Zenica-Doboj Canton CACP, and on the website of FACP that segment is not well hyperlinked so requires particular search, but do not have information for all CACP;
- Information about scope of the work of Administrations;
- Information about structure and organization of Administrations.

One of the drawbacks is primarily reflected in the fact that although CACPs have on their websites the legislation of higher level and legislation on their level, at the site of FACP there is a list of documents, laws, rules and regulations, but neither one of them is possible to look at website of FACP, while at the website of CACP it is possible.

Only on website of CACP of Tuzla Canton is possible to get more information about management of CACP, while on other presentation only available things about managers are: name and contacts.

As in the RS, in all of the analyzed websites in FBiH (FACP and three CACP) there is not the Work Plan of Administration, the Report on the implementation of the Work Plan of the Administration, audit reports, information about budget and Analysis of budget execution. All this, together with the lack of websites for other CACPs, greatly affects the transparency of the system of protection and rescue in the FBiH. At the level of CACP, on their websites, there are no Treat Assessments of vulnerability of canton while on the website of FACP there is Treat Assessment from natural and other disasters in FBiH.

It is good to point out that on the existing presentation of CACPs are the lists of Headquarters for Civil Protection in Cantons, but such a list cannot be found on the website of the FACP. On the other hand, only CACP of Zenica-Doboj Canton on its website has a list of civil protection units.

Analyzing all above conclusion is that, in the FBiH the Internet introduction of a system of protection and rescue is not good enough, bearing in mind that only three of the ten cantons has its CACP website. On the other hand those existing websites are quite insufficient and lacking of key documents such as work plans, work reports, reports on audits and budgets. In addition, more information is needed about the people who work in these administrations, as well as more information about how to contact and obtain information from management, and more contact information on the lower levels, in particular on the website of FACP. All this would certainly give much greater importance to Administrations and also enable greater transparency and awareness of the population about all aspects of protection and rescue.

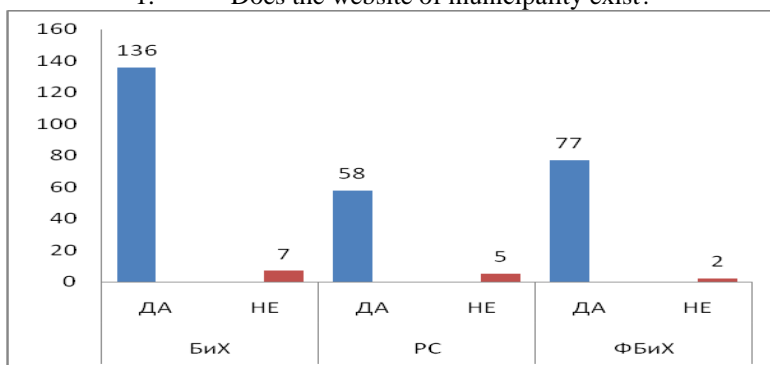
Absence of transparency at the websites of the entity and cantonal level in particular, does not give grounds for optimism that the protection and rescue system will be closer to the citizen where it should be in accordance with the practice but also the legal regulations in BiH, ranging from the state to the entity level and cantons.

6. RESEARCH PRESENTATION ON THE MUNICIPALITY LEVEL

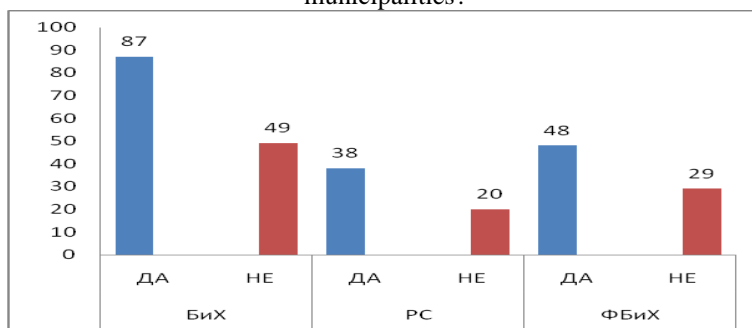
In accordance to analysis of website of municipalities in BiH the results will be presented below. The Results will be presented at the state level and at the entity level while Brcko District BiH will be included in the total number of analyzed websites of municipalities in BiH.

At the BiH level, 136 municipalities have website and it is 95% of all municipalities in BiH. It should be noted that in the RS the number of municipalities without website is 5 (Jezero, Kupres, Istocni Drvar, Stanari, Istocni Mostar), but those are a tritorially small local governments where the population is from 109 (Istocni Drvar) to 1.314 (Jezero). In FBiH internet presentation do not have municipalities Dobretic and Glamoc, which are also territorially small and undeveloped.

1. Does the website of municipality exist?



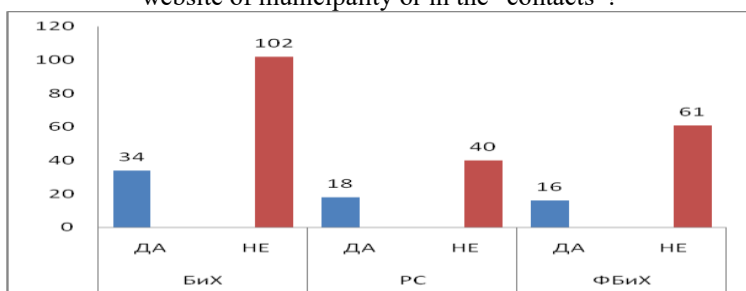
2. Are the Official Gazettes of municipalities available on website of municipalities?



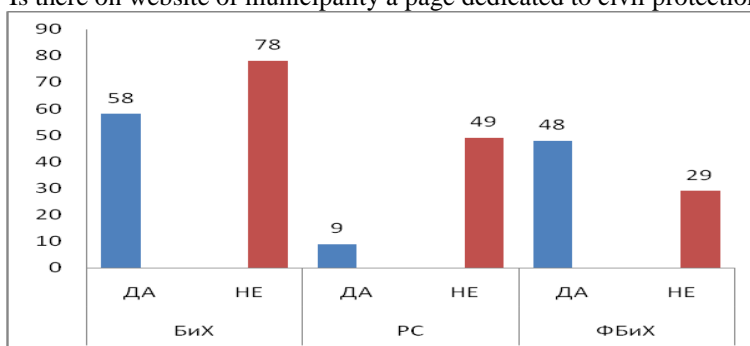
On 64% of the websites of municipalities in BiH exist the Official Gazetts (66% in RS and 62% in the FBiH). All decisions of local governments in accordance with the Law on local government in the RS and the Law on Principles of Local Government have to be published in Official Gazetts. It means that all the plans in the area of protection and rescue, the composition of the Headquarters for Civilian Protection, the names of Commissioners for Civil Protection and other documents, have to be published in it. For those who are interested in those documents which are published in Official Gazetts it takes time to find them. However it should be noted that 36% of municipalities in their websites does not have this possibility.

When it comes to the contact information for emergency services in municipalities, they are very ignored on websites. In BiH, 75% of municipalities on their websites, on the home pages, have no contact information for emergency services in the municipality (RS 69% and FBiH 79%).

3. There are contact information about emergency services at the first webpage of website of municipality or in the “contacts”?

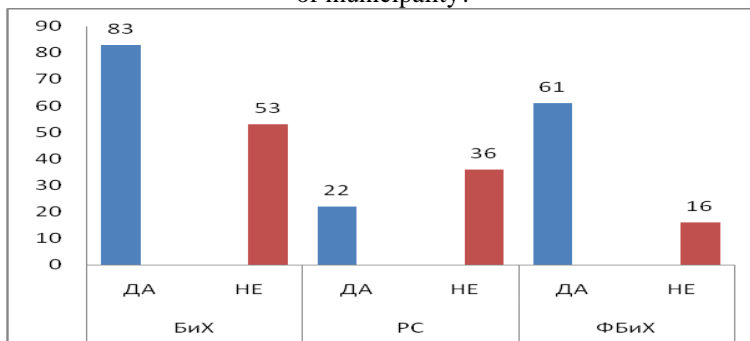


4. Is there on website of municipality a page dedicated to civil protection service?



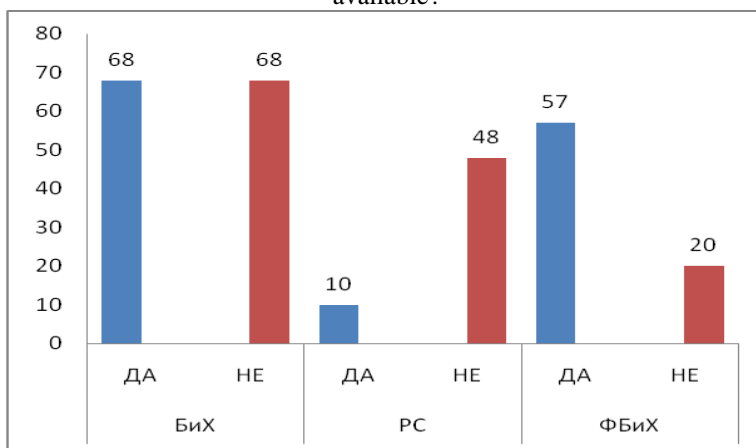
When it comes to the existence of the webpage, on the website of municipality, which is exclusively dedicated to civil protection service, it must be noted that more than half (57%) of the websites of municipalities in БиХ have no that kind of a webpage on its website. Analyzing the answers in the entities can be seen the big difference between the РС and ФБиХ. In the РС is only nine websites of municipalities (15%) which contained a special page dedicated to civil protection while in the ФБиХ it is 48 municipalities or 62%.

5. Do there exist contact information about civil protection service at the website of municipality?



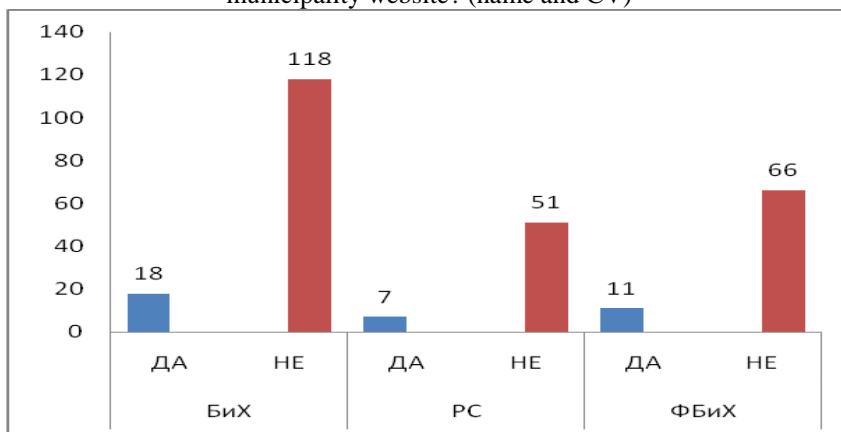
Regarding the contact information on civil protection services, 61% of municipality websites contain that information. And in this case there is a big difference between the RS and FBiH. In the RS in only 38% of municipality websites is possible to find contact information for civilian protection service while in FBiH 79% municipality websites have contact information on civil protection service.

6. Are the information about scope of the work of civil protection service available?



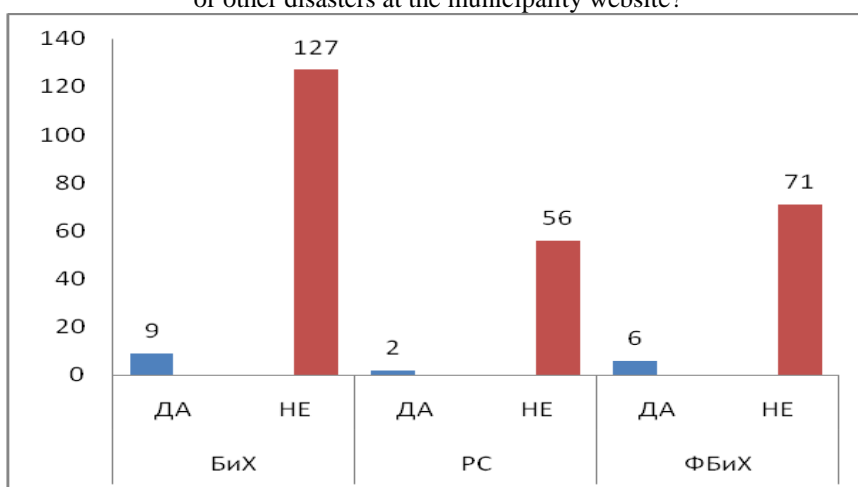
At the BiH level approximately the number of those municipality websites, containing information on civil protection responsibilities is equal with the number of those that do not contain that information. Again, on the other hand, websites of municipalities in RS only in ten cases (17%) contain information about the responsibilities of civil protection service, while in the FBiH 26% of municipality websites have no information on scope of the work of civil protection service.

7. Are there available information about managers in civil protection service at the municipality website? (name and CV)



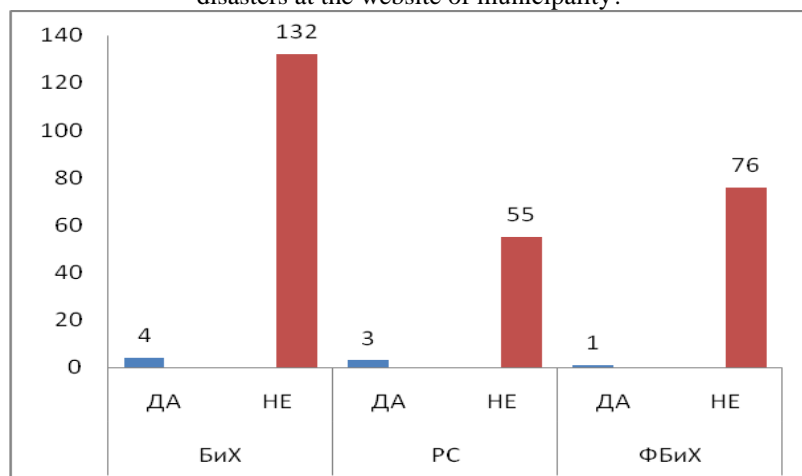
Basically, 87% of municipality websites in BiH do not have complete information about the heads of branches of civil protection service in municipalities. There can be find the name and contact information but more information can not be found, such as: education, biography, current obligations and ect. The situation is similar at the entities leve.

8. Are there exist instructions for the population how to behave in case of natural or other disasters at the municipality website?



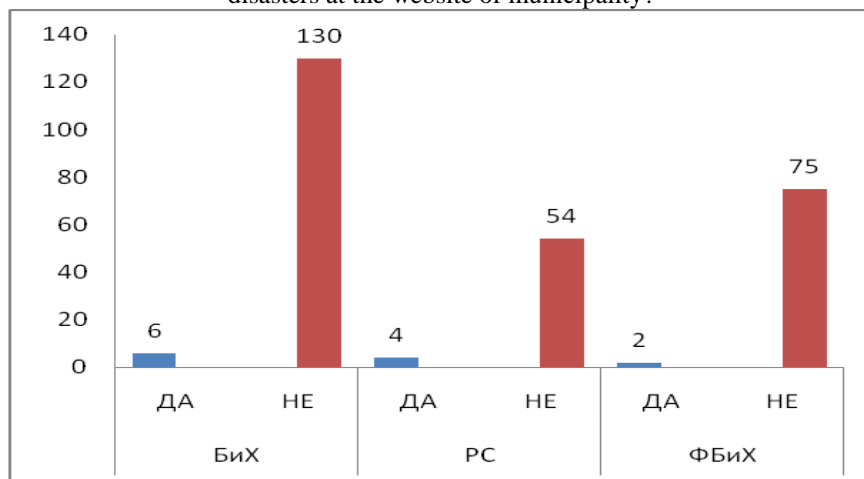
Instructions for the population in case of natural and other disasters exist only on the nine websites of municipalities in BiH (two in RS and six in FBiH and Brcko District BiH) while in all other cases, no such information.

9. Does there exist the Threat assessment for municipality from natural and other disasters at the website of municipality?



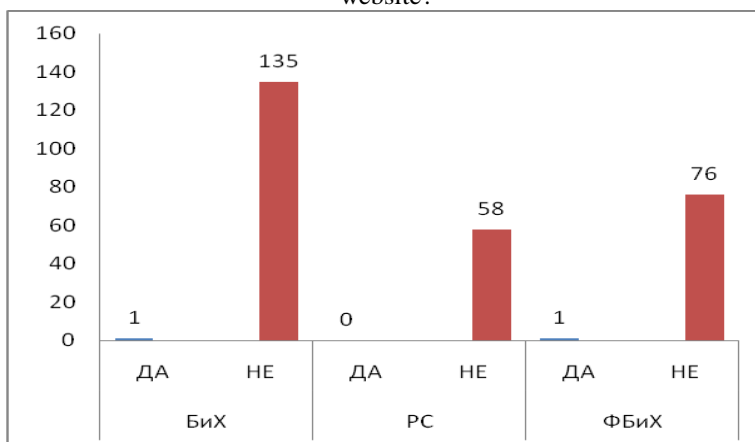
When it comes to the Threat assessment for municipality from natural and other disasters, only four municipalities in BiH (three in RS and one in the FBiH) on its website have it.

10. Does there exist the Plan for protection and rescue from natural and other disasters at the website of municipality?



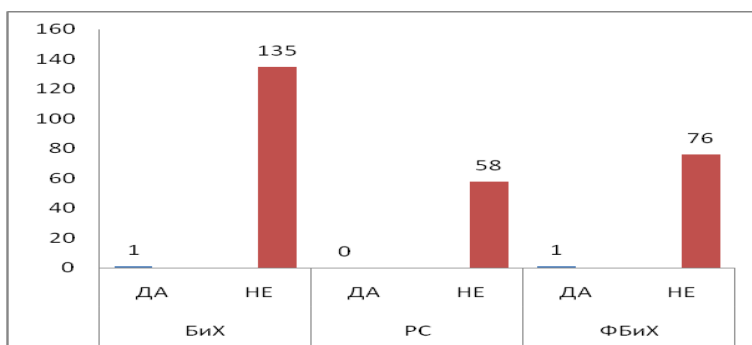
In this case 96% of website of municipalities do not have the Plan for protection and rescue from natural and other disasters.

11. Is there a list of members of Civil Protection Headquarters at the municipality website?



In a case of members list of Civil Protection Headquarters, just municipality Odzak in FBiH has that list on its website.

12. Is there a list of Commissioners for Civil Protection at the municipality website?



The list of Commissioners for Civil Protection exist only on one municipality website and it is municipality Odzak in FBiH.

7. CONCLUSION

Analyzing the results it can be concluded the following:

At the entity level, there are websites of Civil Protection Administrations but key documents about the work of the institutions are missing and these websites cannot be considered as transparent and it is necessary to put key documents about the work of the Administrations at those websites;

In the FBiH at the cantonal level all CACP should have website while the existing three websites should be upgraded because they are not fully transparent since there is no key documents related to the work of the CACP;

BiH should seek to ensure that all municipalities in BiH obtain a website and within it should be at least one webpage dedicated to civil protection with very easy access without a lot of search. This would lead to the fact that the contact information on civil protection service can be easily find on the websites of municipality and also information of its competence and basic information about managers and employees in civil protection service in municipality. Although the situation is somewhat better in the FBiH than in the RS in this regard, the goal should be better awareness on civil protection and easier access to page dedicated to civilian protection on the websites of municipality in all BiH;

When it comes to availability of civil protection documents, information about members of civil protection headquarter and information about Commissioners for Civil Protection, situation is not satisfactory. To reach transparency in the work of civil protection service and timely and full awariness of sitizens about that work at the websites of municipality should be posted: The Threat assessments for municipalities from natural and other disasters, Plans for protection and resque, list of members and its duties in Civil Protection Headquarters and contact informations and list of Commissioners for Civil Protection. In this way, citizens have possibility to plan and organize self-protection and mutual protection as a basic civil protection measures at the local level.

Bearing all this in mind it is clear that the websites of Civil Protection Administrations in cantons and municipalities, as primary pillars of protection and rescue system in BiH

must be improved to ensure the transparency of these administrations and civil protection services and to provide a quick, easy and much transparent access to all documents and persons related to the protection and rescue in BiH, and therefore the system for protection and rescue would be nearer to the citizens who are basic providers of protection and rescue at the municipality level.

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TERRORIST ATTACKS AS CAUSE OF EMERGENCIES

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Abstract: Emergencies are a form of endangerment of the security that can lead to consequences of various natures for people, property and the environment. Today, emergencies are one of the most dangerous challenges for, risks and threats to, the security due to the accelerated development of the entire human community; therefore it is understandable that they are in the center of the attention of both natural and social sciences. The scientific objective of this paper is to show that it is of greatest importance to timely recognize and adequately control the challenges, risks and threats that accompany emergency situations before there are catastrophic consequences for people, property and the environment; particularly, in order to avoid consequences that could affect the security of the entire state.

Key words: *Emergencies, endangerment, security, risk, terrorism.*

1. INTRODUCTION

Human history is replete with instances of dramatic and destructive effects due to which a man suffered negative consequences. Events and situations that endangered the survival of man occurred in different forms, with different intensities and characteristics. In such a situation, in their evolution and socio-cultural development, man in various ways trying to, in their midst, suppress danger that limited and hampered the realization of their needs. The troubles afflicting humans were unpredictable, multi-dimensional, without time and space limitations, and the effects were devastating. Various efforts to events with negative effects prevent or at least reduce resulted in various measures that people have undertaken in order to achieve a certain degree of protection. Although the scientific achievements at a very high level of development, man and his community still threaten the same or similar hazards, whose effects are many times larger in terms of capacity increase risk due to technological development and population increase per business unit. A special place in the spectrum of risks to human society takes terrorism as the cause of emergencies. Contemporary views on security companies give an important place emergency situations arising as a consequence of terrorism on a scale of danger, especially if we take into account the number and frequency in recent years.

2. TERRORISM AS A CONTEMPORARY SOCIAL PHENOMENON

Since the attacks of Al-Qaeda in the World Trade Center in the US and the Pentagon in Washington on 11 September 2001, almost no day without news of a terrorist action. Terrorism today constitutes one of the greatest threats to modern security. Terrorism is among the national and international authors variously defined, but among them all appear the same elements that define an act as a terrorist. These elements are:

- use of violence,
- political character of the activities,

- provoking fear and other psychological reactions,
- targeted, planned and organized activities. [1]

From the above it can be seen that terrorism may pose a common cause of emergency situations in the contemporary world. Figure 1 shows the countries with the highest risk of terrorism in the world.

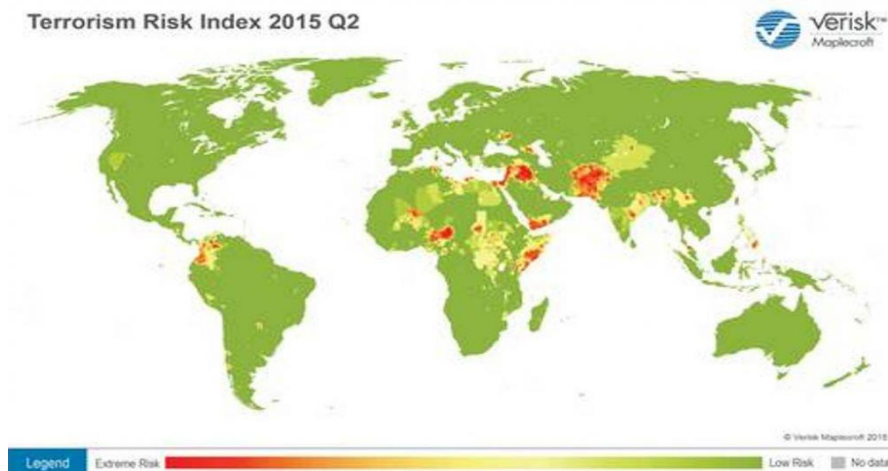


Figure 1. The risk of terrorism in the world of 2015.

From: <http://maplecroft.com/portfolio/new-analysis/2014/07/23/global-terrorism-fatalities-30-risk-attacks-increase-most-china-egypt-kenya-and-libya-maplecroft/>

Terrorism is a cause of emergencies that fall within the group of the dangers that a man deliberately provokes and initiates - consciously, well designed and malicious. These activities are planned and performed most often in secret by strictly a prescribed scenario. Can be run in peacetime, during an imminent threat of war, during the war. The main characteristics of modern terrorism is its unexpectedness. Time and mode of attack are unpredictable, and the objectives and tasks often unclear which hinders the effective prevention of terrorist attacks. Obvious example is the attack on the French newspaper "Charlie Hebdo" in January 2015.

To in any way could predict and prevent terrorist attacks and the emergence of emergency situations must take into account the wide range of possibilities for terrorists and make a detailed plan for prevention and response. Terrorist attack that causes the formation of emergency can be done by different means. In addition to conventional attacks, is increasingly fears of terrorist attacks that may be caused by weapons of mass destruction caused mass death and serious bodily injury. In the case of the use of chemical, biological and radioactive agents can not immediately determine their degree of danger which prevents consideration of weight emergencies.

Beside WMDs can be used by conventional explosives and other weapons as a means of attack and can not exclude their combined use. According to experts, chemical substances and biological agents whose use is most likely in the execution of terrorist actions are:

- Toxic herbicides and insecticides,
- Hazardous chemical substances: chlorine, phosgene, hydrocyanic acid and other,
- Toxic substances: sarin, soman, VX (nerve agent), mustard gas, lewisite,
- Psychogenic substances and narcotics,
- Provoke severe infections: black anthrax, smallpox, tularemia and others,
- Natural poisons and toxins: strychnine, ricin, botulotoksin and others. [2]

These substances of very high chemical and biological agents could penetrate into the hands of terrorists in different ways due to the ever-expanding range of their capabilities, leading to the conclusion that terrorism today is a global threat to humanity. [3]

3. MANNED VALUES THREATENED BY TERRORISM

Endangering the safety of the facility, or protected values, activities whose head is a man or a whole human collectivity emphasizes the motive that drives him to commit acts of destructive character. If the destructiveness caused by hostile motives then it is a man or a collectivity and most destructive part of that process.

The main task of all subjects of security is the protection of vital values of a society, which includes the protection of human life and health, protection of natural and material goods and values, and protect critical infrastructure of the entire country and society. Emergencies created as a result of terrorism are just all those events that endanger the values, disrupt the normal functioning of the services and businesses and represent a threat to the stability of the local, national and global development.

In addition to the life and health as the most important value, which is threatened by terrorism should mention the group values relating to socio political situation - when the threat to social and political situations viewed through the involvement of the police and other security forces, recruitment of medical services, the existence of panic and fear among the vulnerable population, destruction and misappropriation of public and private property, attempted secession of territory, repudiation of the law and the state by various separatist and terrorist groups, a large number of killed and injured due to poor preparedness and aid organizations. Then inadequate use of international aid, the loss of trust in the system of government at all levels or individually. Due to poor preparedness and organizations help cause negative effects on the psychological power of the population to cope with the effects of emergencies caused by terrorism. Also, this situation could affect the occurrence of damage in cross-border areas, the engagement of forces in cross-border areas, as well diplomatic contacts. [4]

Of particular importance for the prevention of terrorist acts and emergency situations which may cause the definition of critical infrastructure of the state, as in the Republic of Serbia has not been done. Critical infrastructure is mentioned in the Law on emergency situations in 2009, but it is not explicitly stated what it includes. [5]

4. FACILITIES VULNERABLE TO TERRORIST ATTACKS

Terrorists for their targets always choose the most vulnerable targets innocent people, always seek to provoke fear in the population which would intimidate government

specific countries. Also terrorists harder and media spectacle because very often for his target and choose the places where a large concentration of people.

The most vulnerable objects in terms of terrorist attacks can be determined based on several criteria:

- Number of people,
- Accessibility,
- Criticism from the aspect of daily life,
- Economic significance,
- Symbolic value. [6]

Based on these criteria, we can define most of the objects that are most affected by terrorism, which is of primary importance for the prevention of emergency situations that may arise as a result of terrorist attacks. Among these facilities include: transport infrastructure, waterways, airports, railways / metros, Government institutions, recreation centers, historic buildings, military installations, nuclear power plants, computer systems and others. Figure 2 shows the countries of Europe in terms of threat of terrorism.



Figure 2. Terrorism in Europe

From: <http://www.vijesti.rtl.hr/novosti/svijet/1628388/karta-svijeta-po-riziku-od-terorizma-hrvatska-jedna-od-sigurnijih-zemalja/>

5. FIGHT AGAINST TERRORISM

Although terrorism is a risk with high consequences, due to the low probability events, the risk of a terrorist attack is very often overlooked, which is the wrong approach. Holders of contemporary terrorism show no restraint in any respect but show intention to inflict the greatest possible pain to the enemy leading the phrase - "behind terror, panic ahead of us," [7]. All exposed indication of how terrorism are obvious, so are alarming, but it should not be that means that we should capitulate to fight it. Terrorist act should be understood as a challenge which can get in the way [8].

The anti-terrorist fight is mainly formulated the State Constitution, laws and operationalized always radical. In addition, most states make agreements with its

neighbors and the international community for cooperation and assistance in the fight against this, today, more widespread threats.

The reason for the conclusion of these agreements is mainly because the emergency situation created by terrorist act can often exceed the capabilities of a State to meet it and require specialized resources, primarily in the case of restoration of biological, chemical or radioactive consequences of a terrorist act. The volume of emergency may require the support of neighboring countries and as far as the conventional means such as fire services, protection and rescue and emergency information to the public. The fight against terrorism includes various measures and activities that can be divided into armed and unarmed. Unarmed measures and activities in the anti-terrorist fight is divided into:

- Normative measures and activities
- Political-diplomatic measures and activities
- Security Intelligence measures and activities
- Educational and disciplinary measures and activities
- Information and promotional measures and activities
- Financial-tariff measures and activities.

The measures and activities of the armed fight against terrorism belong to armed actions and operations where under armed operations involve combat operations is limited by the objectives, tasks and thawing, and operations under the comprehensive series of coordinated activities.

6. CONCLUSION

In order to solve all the problems inherent in the emergency situation caused by the terrorist attacks it is necessary to apply a multidisciplinary approach and programs towards defining prevention, and after the elimination or reduction of risk in order to achieve an adequate level of security. One of the main tasks of all relevant stakeholders is a timely observation of hazards, preventing and mitigating the possible consequences, and then the establishment of an efficient system's asteroid belt protection and rescue in case of accident. The mere prevention of emergencies makes the basic assumption of their efficient management.

Various experts and scholars have realized that it is not enough just to provide help for the values when an accident has already desi. Veoma important place receives the principle of "preparation and prevention." Managing emergency situations arising as a result of terrorism, as an element of security companies, is gaining in importance and of its implementation are discussed at a high level, at the United Nations. The specialized agencies of the United Nations, regional and national bodies, directing enormous energy on a universal model of behavior and response in emergency situations that may arise as a result of terrorist attacks.

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IS IT NECESSARY TO REDEFINE THEORIES OF THE SUSTAINABLE DEVELOPMENT

Slobodan Simic

Abstract: *As the man by nature tends to developing individuals, communities and society as a whole, it is imperative question does the balance which is called sustainable development can be achieved. It is evident that the achieved level of development of human society noticeable deviate global development trajectory, until the holistic approach of systems thinking and values, neglects. Intensive disturbance between nature and society is particularly highlighted in the last years of the last century.*

This paper, through a critical review of certain theories and views, seeks to problematize environmental degradation as a global problem of the stable security environment.

Key words: *ecological security, adaptability of ecological system, ecological consciousness*

1. INTRODUCTION

The establishment of a stable relationship between economy, social development and ecology is increasingly rising to the pedestal of the world's problems. The first-mentioned factor in the development of mankind, has, without any doubt, its importance. Crisis periods, such were the Great Depression from 1929 to 1933 and financial crisis in the US in 2007, as well as wars, significantly undermined the economic market. However, the world economy, by using different measures, recovered. No matter in which extent we notice changes in the society and how some of them may look acceptable or not, yet, human society is moving in a holistic way. However, will the measures taken in the field of socio-economic sphere and in the field of environmental security be sufficient to stop devastation of the natural environment.

The impact of the instruments for achieving the geopolitics objectives and redistribution of sphere of influence has become, in the modern era, almost normal in bilateral and multilateral relations. In their essence lies fight for control over the resources and different approaches to modeling environment that fits individual countries, professional associations and societies. Sometimes this is done under the disguise of fight for human rights, sometimes by setting demands for accessing to energy sources or simply, influencing the economic situation of international entities, which voluntarily or involuntarily, for a longer or shorter period of time, accept or not accept the newly developed situation. Implications of this geopolitical approach are numerous. Challenges, risks and threats that we have today were almost unrecognizable only twenty years earlier.

Global structural changes affecting the international community late twentieth and early twenty-first century, make world today more complex and relationships in the world harder to understand. Bringing judgments and conclusions about some process or appearance is a multiple imperative.

With regard to the reconceptualization of geopolitics, each of its analysis must be more then strategic analysis of national communities and reflections of contemporary theorists and doyen of geopolitics. From the geopolitical point of view of major countries,

primarily the United States, the global image of the world is characterized by certain types, places, people and drama. (Tuathail et al., 2007 114).

2. THE SOCIO-ECONOMIC REALITY AND ECOLOGICAL THEORY

The world is dominated by real and turbulent socio-economic conditions and environmental and energy factors are often forgotten. Ignoring these factors or insufficient representation in the considerations of the need for sustainable development in the coming period could bring incalculable consequences.

In December, in Lima, Peru, was held a summit on climate changes. Before the summit participants were presented few information on which UN experts warn:

- average temperature on the planet from 1880 to 2012 increased by 0.85 degrees Celsius;
- possibility that this is caused by human activity is ranging from 95 to 100 percent;
- so far oceans have accumulated about 30 percent of carbon dioxide which is thrown by human kind in the atmosphere and so is their level of "acidity" increased by 26 percent compared to the Pre-Industrial Revolution;
- almost all the world's glaciers are melting;
- concentration of carbon dioxide and methane is the highest in the last 800,000 years;
- it is expected that droughts will last longer, and that some regions will be more often affected by the catastrophic floods;
- in order to limit warming of the atmosphere by two degrees of Celsius, it is needed, by 2050, to reduce carbon emissions by 40 to 70 percent, compared to 2010 level. (DW, 2015).

Given these features, the question is whether these theories on climate changes, warming the atmosphere, pollution of the environment and resultant strategies, doctrine and practical steps for environmental protection, should be, in some sense, revised. The reasons for this are several. Basic reasons are recognized in time scale, because some changes take place much faster than predicted in initial estimates; economic investments in the segments of environmental safety are not proportional to the changes in the natural environment as well as changes in the social sphere; need for greater protection of the environment from a number of influential natural and technological factors.

Examining the contents of this problem conclusively, it is obvious that the relation between ecology, economy and security in the future will be very important. What problems are imposed and what are the consequences? States and societies can be protected from incoming processes or asymmetric threats. The process of globalization is unstoppable and will cause many controversies and paradigms. However, it can be asked a hypothetical question whether the transaction in the production and trade of weapons in the world, which would be shifted to the field of environmental safety, could return a stable ecological environment.

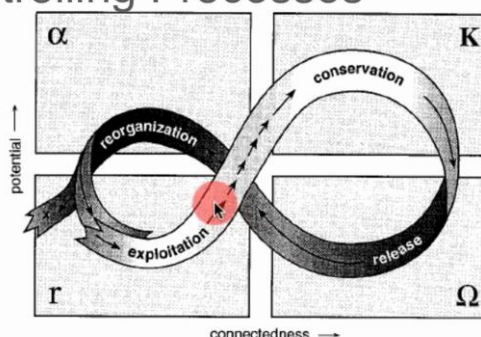
For consideration of the above crucial moments it seems acceptable to do a critical review of some current theories in this field. It deserves the special attention considerations of Gunderson and Holling on understanding of the transformation of human and natural systems (see Gunderson & Holling, 2001). The authors discuss the

transformation of the socio-economic systems for the purpose of their adaptability to modern conditions in which they must either survive or disappear. The determination of the term *resilience*⁶⁷ is significant because it is the most complete term in explaining the flexibility and adaptability of the systems (including natural) in today's conditions. It is now day common term for many visions and statements. Speaking generally, the respondents believe that it is something or someone who produces harassment or shock thereby making the disturbances in the system. The *resilience* concept is used in many disciplines, but the term is originally used in psychology, ecology, mitigating the effects (a military point of view) and engineering. For our considerations it is essential the ecological perspective which goes into two directions. Firstly, it is focused on the rate of return of associated disturbances of the nature, and secondly, it is the ability of the natural system to focus on recovery. (Walker and Salt, 2014: 3).

Gunderson & Holling's Theory gives approximate consideration of the dynamic system in four phases:

- Reorganization
- Exploitation
- Conversation
- Release (Figure 1)

Controlling Processes



Taking into account the global Figure 1 - The phases of consideration of the dynamic systems

economy, it is evident that this is a disorganized system and the system which is not unified, but, however, there are some common basic principles. The economy, in its development, was several times reorganized, it changed from commodity exchange to modern banking transactions done by modern technical and technological assets. In its development has had periods when, together with the development of socio-economic formation, was put on a pedestal and functionally contribute to the development of micro and macro-regions, governments, etc. Periods of stagnation, so to say, could be seen throughout the world developmental disorders such as wars, major natural disasters and the like. However, regardless of the many deviations in the development of world,

⁶⁷ Resilience – flexibility, adaptability.

economic indicators suggest that thru the economy could be seen recovery of the society, the state (going out of recession and depression)⁶⁸. (Tanjug, 2015).

Stereotypical approach to economy takes unsufficiently into account the social aspect because this is the area from which will be generated many problems and impacts on the economy. Economic development used to be, unjustifiably, set up as a forerunner of everything.

Mladen Ivanic believes that, in economic terms, the economy goes in a period of adverse economic situation which leads to the growth of unemployment, bankruptcy of companies and low profits. Normally, this author believes, one cycle of the economy includes: crisis, depression, revival (rise) and prosperity (economic upswing or boom). (Ivanic, 2002: 618-619).

Some social scientists believe that human society went through some major phases of development. Many sociologists distinguish premodern from modern societies. The difference is very general and can ignore the differences that exist between societies of the same type. Then again, the distinction is also influential and useful. It is useful because it allowed sociologists to identify some of the key changes that have occurred in the human history. In that way, they were able to discuss about the meaning of these changes. Some sociologists, though certainly not all, argue that it is currently developing or have already developed a new type of society, postmodern society. (Vejnovic, 2012: 109).

Since the creation of human society through socio-economic formations and determination of scientific phenomena and processes that were characteristic of certain phases of development of human society, numerous ups and downs can be seen. As declinations can be taken war devastations, genocidal intentions, movements which are retrograde in the society, the persecutions of individual nations and people and others. The actions and deeds in order to satisfy the interests of individual interest groups or even states are sometimes oriented to be at the expense of other stakeholders. As positive can be considered activities which led to liberation from slavery, the struggle against colonialism and others.

The human race, in the socio-economic and historical sense, had phases of progress and declines. In terms of the reorganization human race had clear phases between socio-economic formations, for example between feudalism and capitalism. The society, being in one socio-economic formation, has its own path of development when exploiting its natural and human resources. The stagnation has already been mentioned by retrograde phenomena and processes (world and regional wars). Release occurs evolutionary, sometimes with social impulses or technical-technological developments that make new, more modern society. It is evident that the society, or the phenomena that occur in the same dimensions of the social structures, patterns of social activities, is always developing in a positive way irrespective of the negative consequences of development.

⁶⁸ In 2015, according to forecasts of the International Monetary Fund, the expected recovery and growth of the global economy will be 3.8 percent, compared with last year's 3.3%. World analysts estimate that global growth will be led by China and the US, while the Euro zone will again become a sore point of the world economy with minimal growth of 0.8 percent. One of the reasons for the expected recovery of the global economy is the low price of oil, which has been halved since last year, so analysts expect that it will stay at this level in 2015 and stimulate growth in most countries, because consumers will be able to set aside more money for other things, while for companies it means lower operating costs. Low oil prices could help the economies of the EU and Japan to maintain a minimum GDP growth.

It is obvious that the socio-economic development of civilizations, societies, states had different influences, motives and causes of ups and downs. From this contextual level had to be established, directly and indirectly, a relationship with nature, from which were and from which will be drawn resources for existence.

In consideration of relations between nature and society, Marx and Engels pointed out that "In nature, if you do not take into account the reverse action of man on nature, only unconscious blind forces act on each other, and in their mutual interaction arise a general law. In the history of society, on the contrary, all stakeholders were gifted people who act prudently and passionately and strive for certain goals; here nothing happens without conscious intention, without the aim sought to be realized "(Marx and Engels, 1950: 378-379).

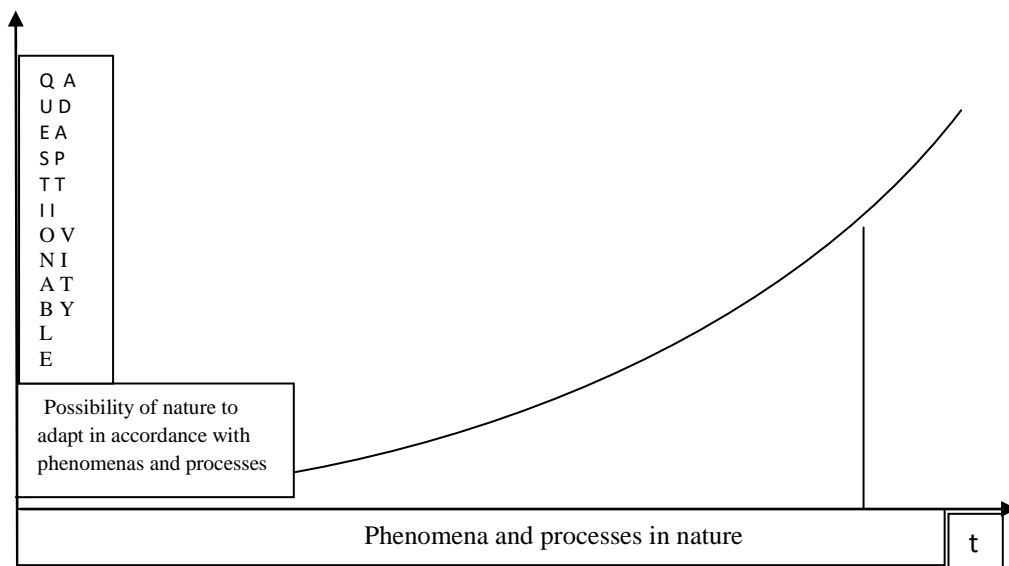
Considering Figure 1, already provided, the authors also considered that the nature has its own cycles. In this case terms connectivity and potential, reorganization, exploitation, stagnation and release should be understood conditionally, but contextually and functionally they are eligible. Nature had reorganized itself many times after natural or technical-technological disasters. It had her periods when it evolved, new forms of life in plants and animals were created. Periods of stagnation can be considered through a natural disaster, but recently can be considered as the impossibility of recovery after different impacts on natural laws and processes. Re-evolution already becomes undefined and lasts unacceptably long period of time. In fact, we now have to think how to protect the natural processes and phenomena.

Here is suitable a critical review of the theory which in an insufficient way takes into account the time as well as emerging interdependence. A characteristic is that the system of nature has been long built, and for a very short time the system collapsed. The principle of adaptability is greatly disturbed, while conversation within the system of the natural environment is undermined primarily by human activities. Such a self-organized system which underwent under various influences can be less and less flexibly self-adapted. According to estimates made by scientists in the coming period some plant and animal species could face extinction, climate changes may cause environmental migration and could result in a lack of healthy food. Some things, at least, may produce disturbances in a stable security environment. Diagram 1 - Development of phenomena and processes in nature and its functions, displays, in the first phase, the linear phase, influence on natural phenomena and processes with the possibility of independent reorganization by nature itself and for some time assumed (or recently assisted by human activities). The second, logarithmic phase, indicates that some processes like the water cycle in nature, climate changes, the sudden increase in air pollution with CO₂ under different effects which are causing the disturbance, that the question is whether we can count on the required level of their reversibility.

Since natural systems are time dependable, the system of nature may be irreparably undermined by the fact that economic and social systems can only be theoretically at the same stage with the natural systems. Diagram - 1 - Development of phenomena and processes in nature can significantly indicate disproportions in a real life.

In order to establish sustainable development it is necessary to balance the socio-economic development and optimal use of natural resources as Gunnarsson and Holling confirmed in their book, but time and interaction, the impact of the processes and phenomena in nature are much faster than anticipated, meaning that this theory needs to be upgraded.

Diagram 1 - Development of phenomena and processes in nature and its functions



Incorporation of the elements of interactivity of natural and social systems is conditioned by many influences and time dependence influence increasingly on other opinions, which can be subjected to criticism. From this contextual level an author Piraz (Piraz, 1998: 366) argues that the environmental safety and safety of human beings was the largest when the following four types of balance were mutually maintained: the requirements of the human population and maintenance of the system capability in the region, the size and growth of human populations, requirements of human populations and other populations, and human populations and pathogens. Now days, the balance of global development now has other relationships that are related to sustainable development.

Taking conditionally into an account a diagram in Figure 2, in time and space, diagram a) can be represented as the economic cycle, diagram b) as development of the society, while c) may represent a system of nature. It is obvious, according to the red dots in the individual diagram, that the systems are not in the same stage of development. As previously mentioned, time determinant for example in the diagram c) system of nature (reorganization) can last longer in a part of the diagram α than in the other two. The system involves the interaction of mutual influences and asymmetric impact on sustainable development on the planet in general.

3. THE IMBALANCE OF THE SOCIALLY-ECONOMIC NEEDS AND ENVIRONMENTAL PROTECTION

With specific characteristics, the said comparisons can be taken for micro and macro-regions, ecological habitats, parts of the human communities, individual bio-communities

and others. For some of them time determination is even more prominent which makes thesis for enrichment of these theories even more important.

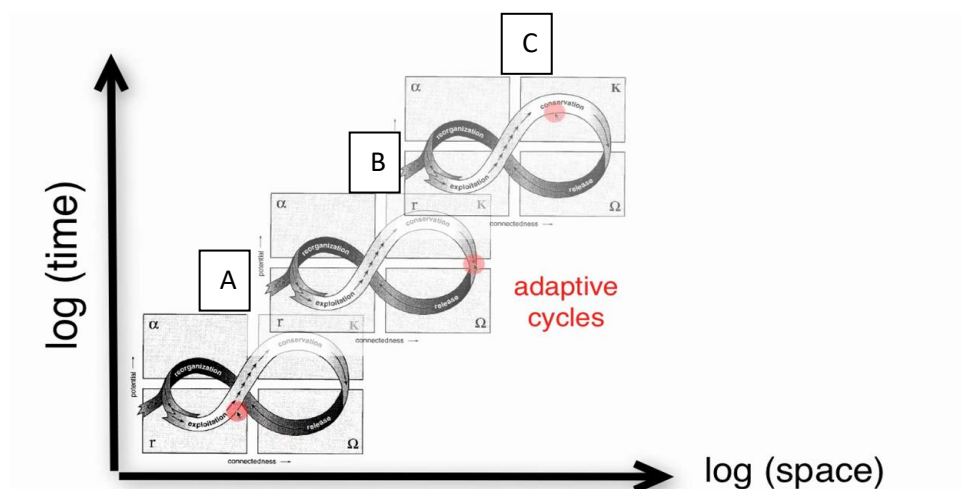


Figure 2 - Relationship between economic, social and natural systems

The disappearance of plant and animal species can be viewed from the point of compromising due to the previously mentioned and other security threats, but also because of illegal actions that are within the scope of ecological crimes.

The current approach of recognizing the basic factors which lead to the loss of indigenous ecosystems and biodiversity, in the broadest context is very well defined by the acronym HIPPO, which is derived from the initial letters of the following words:

H- Habitat alteration;

I- Invasive species;

P- Pollution;

P- Population growth;

O- Overexploitation. (Teodorovic, 2008:133)

Author of the manuscript "Asymmetric conflicts", Zoran Duspara, considers that such animosities have all the elements of asymmetric conflict with the tendency of humans to manage natural processes. The elements are analyzed through:

- determination of partakers - participants, on the one hand a man as an individual or organized into larger or smaller communities and, on the other hand, nature in its scope on the planet Earth;
- interests and goals, which are same and recognized and obvious from the man's perspective - adjust the nature and resubordinate its parts to their needs. On the other hand, metaphorically speaking, nature tends to 'preserve its integrity';
- power (resources and force), used by a man is based primarily on the development of new technologies, while nature displaying its power, showing its potential, on which consequence man is dependent;
- perception (awareness) of a conflict, which was recognized by a man, while nature shows this through "abnormal reaction" or phenomena that damage man;

- characteristics of asymmetrical conflicts where they emphasize: unconventionality, asymmetry, the use of armed and unarmed forms of struggle shaped by a man, the dimensions of the conflict and the goals and interests which primarily considered from the human point of view. (Duspara, 2012: 151-155).

The problem of biodiversity in the area of environmental safety endangered by direct and indirect human activities can be reduced through:

- multivariate activities at the international and national levels (legislative measures, - the activities of non-governmental organizations and others.);
- the protection of endangered habitats for plant and animal species (afforestation, establishing nature parks and similar.);
- the preservation of genetic protection of endangered species of flora and fauna;
- the preservation of genetic resources (even artificial insemination for certain animal species);
- improving the potential of land;
- impact on the reduction of corporate activities and seeking reciprocal measures for corporations, which will be conditioned to enhance the survival and development of biodiversity. (Vejnovic and Simic, 2014: 166).

The above theoretical considerations and practical attempts to point out the problem of more and more difficult adaptability of the nature in the current and future operating conditions, raises the question is it possible to stabilize certain processes in the nature?

The fundamental postulate of the modern relationship between society, economy and ecology and environmental safety is that human activity must be limited by the possibilities of the environment. The lack of healthy food, drinking water, living resources in the coming years could create problems not only on scientific and creative work, but also to security. The rationality of the exploitation of the resources, or minimization of unnecessary losses in socio-economic sphere will influence a whole new eco-design. We must certainly be aware of the fact that it will be ecological-technical future in which the events in the ecosphere will take place in accordance with achieved development of ecological awareness.

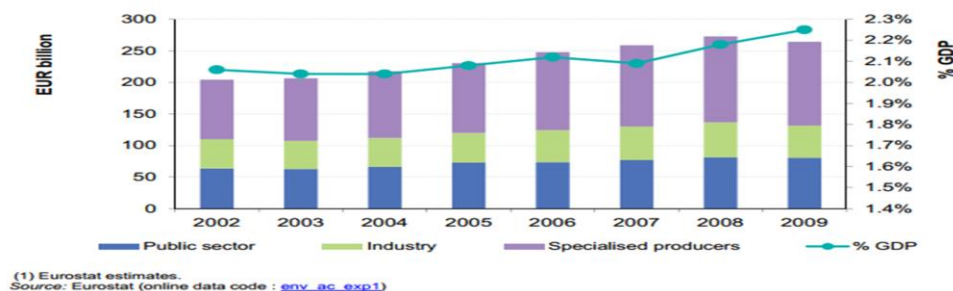
Projecting the future, shows us that we will have to adapt to the socio-economic systems in order to leave future generations the opportunity to live on the planet. At the end of the twentieth and early twenty-first century, there was a demographic explosion, there was an alarming increase in population on the planet. Today the planet has a population of 6.5 billion people, and it is predicted that by the end of 2025, the population on the planet will be 8.5 billion. (Bajic, 2014: 75).

Multidisciplinary nature of the problem is visible because it must include natural and social sciences, as well as cultural experts, chemists, physicists, philosophers. Globally, it is very difficult to build or enrich already existing system based on over-utilization of nature and subordinated to financial flows of neoliberalism.

4. EFFORTS OF SOCIO-ECONOMIC COMMUNITIES ON ENVIRONMENTAL CONSERVATION

Efforts do exist as investments of individual organizations, institutions and associations. For example, the European Union's long-term investment in environmental protection through individual sectors (Diagram 2), which gave some measures of success in the Union.

Diagram 2 - Spending on environmental protection in the EU by sectors from 2002 to 2009 (EUR billions)



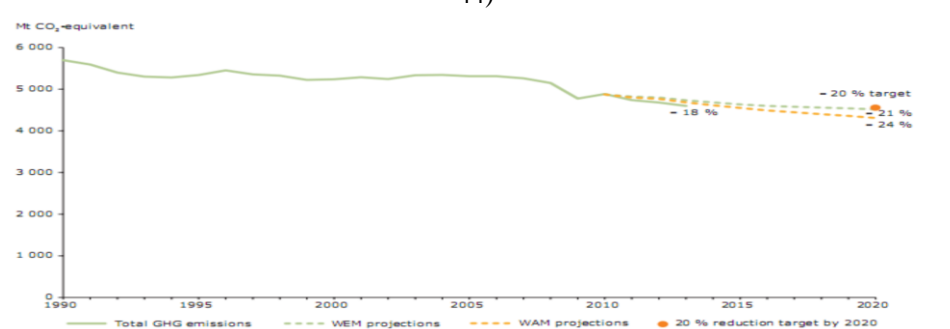
However, the impact on the overall state of ecological safety is produced from countries outside the European Union. Therefore, the aforementioned Summit in Lima, beside a number of conclusions, of which the most important is that in 2015 must be signed a new Protocol, which will succeeded the Kyoto Protocol, it is important to emphasize that the richest countries in the world have pledged over \$ 10 billion to poor countries to combat climate changes, which breached the psychological barrier of ten billion dollars. For EU, where the Member States must comply with certain regulations in this field, countries have established standards. On Diagram 3 can be seen a tendency in a field of mitigating climate changes showing reduced emission of gasses responsible for causing greenhouse effect.

5. CONCLUSION

Economic and social cycles are more adaptable and flexible to various influences than the natural system, can be quickly renovated, and the interdependence of phenomena and processes transforms during development. Problem-solving activities are reflected in the fact that it must be understood at the time how could be systems in nature protected to avoid a negative spiral in the coming period. It would lead to a non-refundable loss of biodiversity, climate change leading to changes in processes and phenomena in nature, with unforeseeable consequences. Contamination of nature has reached a certain limit which could be irreversible to individual plants and animals, but also, for example, reached a process of water cycle in nature. It is therefore necessary to amend theoretical assumptions, adapt or, in some cases, do a completely new conceptualization. Resultant strategic foundations, legislation and practical steps should be synchronized and conductive in reality. This is particularly important to establish in small and developing countries because their industrial development, which is still at a lower level of development, is an important negative factor.

According to current manifestations, redefinition should be made soon by registering risks at global, regional and local levels of natural and technological risks as well as revising the decision matrix, crisis management and adaptation of the table vulnerability.

Diagram 3 - The projection of reduction in emission of harmful gases into the atmosphere from the standpoint of the European Union (Trends and projections, 2014: 44)⁶⁹



It should be taken into account that some of the conventions and agreements of the Unions, states and associations, as well as the some main organizations at the regional and the international level influence on the socio-economic activities. On the other hand, many rules of international economic relations have environmental consequences. Modern tendencies should be directed towards ecological economy in which ecological security approach should be understood by itself. Ecological dimension is undoubtedly necessary to include in the security planning and not to be a subject of a traditional understanding in this respect.

There is a hope, however, after the conference in Lima, that a new conference in Paris on climate changes will tighten the criteria for the protection of the environment in ecological security measures. This could be a significant step in which would be given full meaning to the compound sustainable development.

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EARTHQUAKE HAZARD ASSESSMENT BY APPLICATION OF ADAPTIVE NEURO FUZZY INTERFERENCE SYSTEM

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Abstract: The earthquake hazard assessment in a specific territory is followed by ambiguity and uncertainty. This paper presents the possibility of application of Adaptive Neuro Fuzzy Interference System (ANFIS) in earthquake hazard magnitude assessment. The ANFIS model is developed on the basis of current methodology used for solving these issues.

Keywords: *earthquake, risk assessment, fuzzy logic, ANFIS model (adaptive neural network or neuro - fuzzy system).*

1. INTRODUCTION

A hazard is a threat which has the possibility to exploit system weakness, *i.e.* an event that may cause adverse effects to the system in the form of its destruction, damage, alteration, disclosure [2]. A hazard analysis occupies an important place in the methodology of risk assessment [7]. Most often, hazard assessment is the first step in the risk assessment process.

The main objective of the hazard assessment is to establish the existence of the hazard in particular territory, to define its context and its way of impact, and to determine the degree of impact, in terms of endangering protected values, in relation to other hazards [10]. Upon completion, these hazard analyses are ranked according to calculated values from largest to smallest. Based on the obtained ranking of potential hazards, a decision is made about the urgency of taking measures to reduce potential hazards [7]. Results of the preliminary analysis of potential hazards represent incoming results of the risk analysis [3].

Earthquakes present a natural hazard (geologic hazard), with consequences such as the loss of human lives, as well as economic losses (material destruction) [9]. Serbia is located in a seismically active zone, in its border part, the so called Mediterranean-trans Asiatic seismic zone, or more precisely, Mediterranean belt [9]. Owing to its position on the very edge of the plate, earthquakes in Serbia, according to the estimations of seismologists, cannot exceed 6.2 to 6.3 units of the Richter magnitude scale [9]. Earthquake prone areas in Serbia are the following regions: Kopaonik, Rudnik, Krupaj, Maljen, Lazarevac, Svilajnac, Golubac, Urosevac-Gnjilane, Vranje and Kraljevo [9].

A preliminary hazard assessment of earthquake plays significant role in the risk assessment and in the procedure of taking preventive measures. Earthquake hazard assessment in the Republic of Serbia is defined by *Methodology instructions - development of risk assessment and protection and rescue in emergency situations plans* [3]. This paper's objective is to enhance the methodology mentioned.

2. STRUCTURE OF THE ANFIS MODEL

The Adaptive Neuro Fuzzy Inference System (ANFIS - or fuzzy neural network, or adaptive neural network) is based on joining of fuzzy logic concepts and artificial neural networks - the theories that have found their place on top of interest of researchers in the field of artificial intelligence [6].

A fuzzy logic enables mathematical potential for description of indefiniteness related to cognitive processes in man, such as thinking and reasoning [15], [16]. It enables reasoning with incomplete and insufficiently precise information, which is also called *approximate reasoning* [17]. A fuzzy logic is mostly used for modeling complex systems (Fuzzy Logic System) in which it is hard to define, by using other methods, interdependence that exists between certain variables [6]. The Figure 1 shows general model of the fuzzy logic system. A more detailed explanation of fuzzy logic and fuzzy logic systems can be found in [4], [5], [12] *etc.*

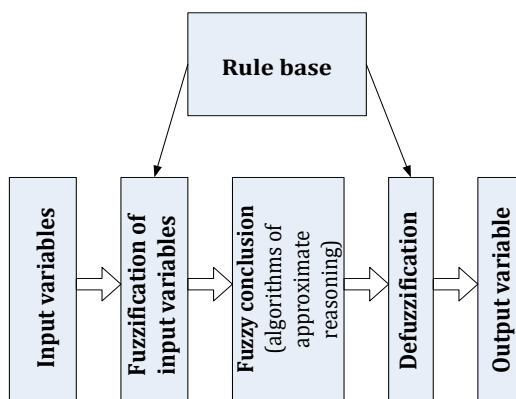


Figure 1: General model of Fuzzy Logic System [7]

Artificial neural networks, with their different architectures built on the concept of artificial neuron, are developed in such a way that they act as biological neural systems in performing functions as learning and recognition of samples [13]. While fuzzy logic enables the mechanism of reasoning with incomplete and insufficiently precise information, artificial neural networks offer certain extraordinary possibilities, such as the possibility of learning, adaptation and generalization [14].

Artificial neurons, like biological ones, have simple structure and similar functions as biological neurons. The body of a neuron is called the node or the unit, as it is shown in the Figure 2.

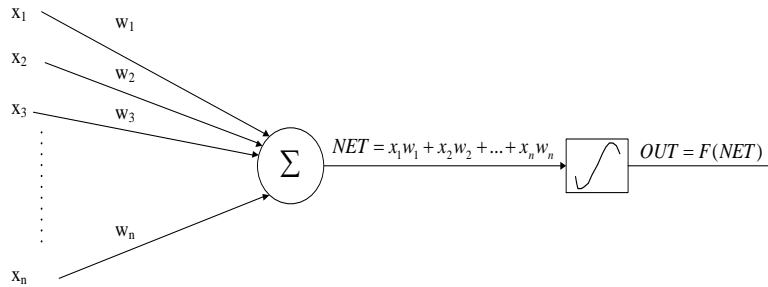


Figure 2: Artificial neuron [6].

An artificial neuron is a simple element of processing that performs a simple mathematical function. Input values in a neuron are shown with x_1, x_2, \dots, x_n , where n is the overall number of inputs in the neuron. Each input value is firstly multiplied with weight coefficient w_{ij} , $j = 1, 2, \dots, n$, where i is order number of the neuron in the neural network [11]. These multiplied values are then summed and result in p_i [6].

$$p_i = \sum_{j=1}^n w_{ij} x_j \quad (1)$$

This value is used as an input in a nonlinear function σ which depends on the parameter θ - the point of activation. The dependence is most frequently such that θ is subtracted from p_i and hence their difference is used as the input in the nonlinear function σ , [8]. In this way we get the value of the input i neuron [6]:

$$y_i = \sigma(p_i - \theta) = \left(\sum_{j=1}^n w_{ij} x_j - \theta \right) \quad (2)$$

Values of the weight factors w_{ij} , $j = 1, 2, \dots, n$ can be changed *i.e.* adjusted to input and output data to acquire minimal error with respect to given data. This process of adjustment of the weight factors is called *learning*, *i.e.* training of neural network.

Both neural networks and fuzzy logic deal with important aspects of demonstration of knowledge, reasoning and learning, but they use different approaches and have their own advantages and disadvantages [6]. Neural networks can learn from the example, but it is almost impossible to describe the knowledge acquired in this way [6]. On the other hand, a fuzzy logic enables approximate reasoning, but does not possess the feature of self adjustment [6].

The main idea of this neuro – adaptive technique is based on the methods of fuzzy modeling and learning on the given composite of data [6]. This method of learning is similar to the method of learning with neural networks [6]. By using given input/output data, the Adaptive Neuro Fuzzy Inference System forms fuzzy system of reasoning in which the parameters of affiliation function are set by using algorithm of back propagation or combined with the method of the smallest square error [6]. This approach enables that the fuzzy system learns on the data it models.

3. DESIGN OF ANFIS MODEL

The ANFIS model for earthquake risk assessment has been developed by using data from standard methodology applied in the Republic of Serbia, which is prescribed in [3]. The aforementioned *Methodology instructions* stipulate that the risk assessment is done on the basis of five criteria:

First criterion (C_1) – existence of planned monitoring documentation;

Second criterion (C_2) – existence of early identification, early warning and notification system;

Third criterion (C_3) – existence of monitoring and recording system,

Fourth criterion (C_4) – density and size of animal fond,

Fifth criterion (C_5) - possibility of generating other hazards.

The above criteria are described using the hazard level, a linguistic scale defining from 1 to 5 how serious the risk is: minimal - 1, small - 2, medium - 3, high - 4, and maximal - 5. The description of each of the aforementioned values by each criterion is provided textually and to some extent is quantified in [3].

Potential disadvantages of this methodology are reflected in the fact that all of the criteria are evaluated only with whole values - 1, 2, 3, 4 or 5. There is no option of assigning subtotal values. For example, the maximum hazard according to the criterion 1 is awarded to those territories which meet the following conditions:

- 1) There is no map of potential hazards, prognostic map, nor seismic zoning map of the territory and it is performed geodynamic monitoring;
- 2) No person is qualified to work with documentation;
- 3) Basic seismicity level of the area (MSK-64) ≥ 9 (MSK - Medvedev-Sponheuer-Karnik scale).

Herein the question is whether to assign a maximum value of hazard if some of sub-criteria mentioned has a lower degree of hazard (for example, MSK -64 < 6, which represents a minimal hazard).

Persons performing the assessment above mentioned can find it confusing, which may be interpreted in different ways. Also, it should be borne in mind that these are estimations, which further affects the accuracy of the definition.

An integral part of the ANFIS model is a fuzzy logic system. The fuzzy logic system consists of five input variables and one output. The interval of confidence for the input variables is within the range [1, 5]. The interval of confidence for the output variables is within the range [5, 25]. All input variables of the fuzzy logic system are described with five membership functions each. The output variable is described with eleven membership functions.

The choice of membership functions and their range in the universe of discourse is a critical point in creating the model. The Gauss curves were chosen for this particular fuzzy system, being easy to manipulate while adjusting the output. The values of the initial membership functions of input and output variables are shown in the Table 1.

Based on specific case, it is created Takagi-Sugeno fuzzy system, because unlike the Mamdani fuzzy system, disposes with the entire universe of discourse. The values of the output variables are constant, which is considered a specific case for such models.

In the next step are defined the key rules. Wrong selection of key rules may greatly hinder or prevent the later ANFIS model training. In this model eleven key rules are defined.

Table 1: The beginning parameters of Fuzzy Logic System membership functions

<i>Functions</i>	<i>Input variables</i>					<i>Output variable</i>
	<i>C₁</i>	<i>C₂</i>	<i>C₃</i>	<i>C₄</i>	<i>C₅</i>	
<i>mf1</i>	0.42; 1	0.42; 1	0.42; 1	0.42; 1	0.42; 1	6
<i>mf2</i>	0.42; 2	0.42; 2	0.42; 2	0.42; 2	0.42; 2	8
<i>mf3</i>	0.42; 3	0.42; 3	0.42; 3	0.42; 3	0.42; 3	10
<i>mf4</i>	0.42; 4	0.42; 4	0.42; 4	0.42; 4	0.42; 4	12
<i>mf5</i>	0.42; 5	0.42; 5	0.42; 5	0.42; 5	0.42; 5	14
<i>mf6</i>	-	-	-	-	-	16
<i>mf7</i>	-	-	-	-	-	18
<i>mf8</i>	-	-	-	-	-	20
<i>mf9</i>	-	-	-	-	-	22
<i>mf10</i>	-	-	-	-	-	24
<i>mf11</i>	-	-	-	-	-	25

After defining the initial fuzzy logic system, the ANFIS model is to be developed. The ANFIS model is developed by initial fuzzy logic system training. In the Figure 3. it is presented general appearance of projecting of fuzzy logic system into the ANFIS model. The ANFIS model presented is composed of five layers. The detailed description of each layer is provided in [1], [6], *etc.*

The following step is neural network training with numerical data. By neural network training initial forms of input/output functions are adjusted so as to belong to fuzzy sets. A set of numerical examples is obtained by using the tables provided in [3]. The training is conducted with 3125 data in ten thousand of epochs. The change of function of adherence is trained by back propagation algorithm. At the end of the training an average error of 0.07 is obtained, which can be considered satisfactory in decision support system. The flow of error decrease during the training is provided in the Figure 4.

First check of the ANFIS model setting is performed by checking its sensitivity. Sensitivity check primarily determines if the input changes result in appropriate output changes. In the Figure 5a it is shown in which way the input value of the criteria C1 influences the output value (almost identical functions are also provided for other input criteria). In the Figure 5b it is illustrated how the criteria C1 and C2 influence the output (the outputs are similar for other combinations of the criteria).

Analyzing the function from the Figure 5, it is concluded that the system which is set is sufficiently sensitive, or, that the increase of the input criteria value results in output value increase, and *vice versa*.

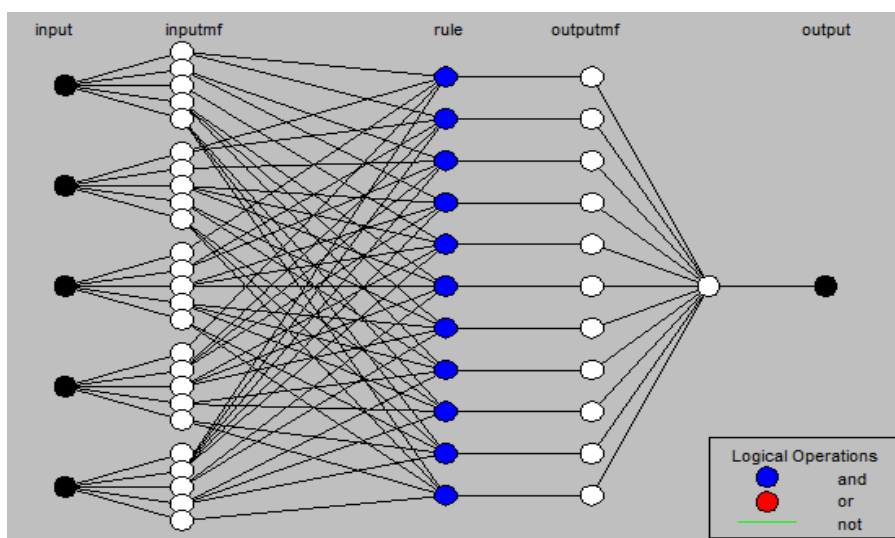


Figure 3: ANFIS model structure

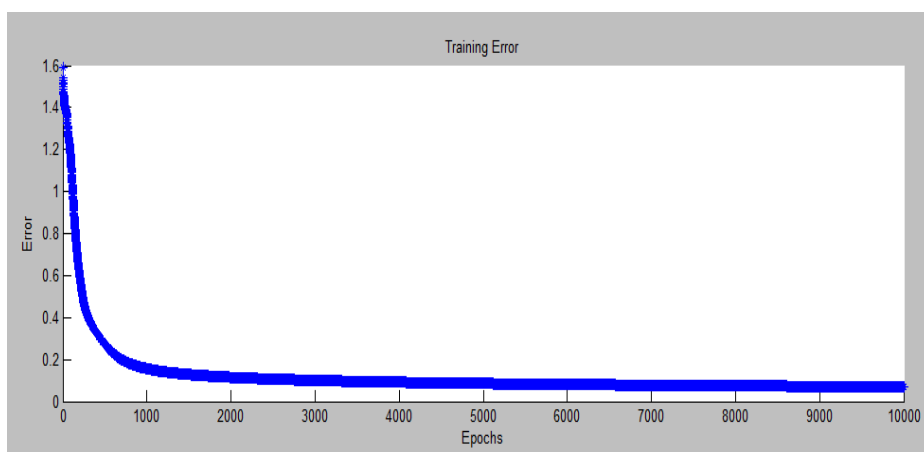


Figure 4: Display of error decrease occurred during basic fuzzy logic system training

Values of adjusted membership functions of input and output variables are shown in the Table 2.

Table 2: Values of function parameters after the training of the ANFIS

Functions	Input variables					Output variable
	C_1	C_2	C_3	C_4	C_5	
<i>mf1</i>	1.79; 1.62	1.73; 2.04	1.63; 2.35	1.58; 2.08	0.42; 1.00	3.61
<i>mf2</i>	1.87; 2.82	1.78; 3.33	1.50; 2.72	1.50; 2.99	1.55; 1.34	6.43
<i>mf3</i>	1.56; 3.17	1.73; 3.29	1.62; 3.33	1.64; 3.33	1.44; 2.73	7.48
<i>mf4</i>	1.83; 2.82	1.77; 3.22	1.53; 3.74	1.46; 3.55	1.42; 1.88	10.9
<i>mf5</i>	1.80; 4.11	1.75; 4.44	1.6; 4.28	1.59; 4.24	1.38; 3.50	13.73

mf6	-	-	-	-	-	15.77
mf7	-	-	-	-	-	16.83
mf8	-	-	-	-	-	19.23
mf9	-	-	-	-	-	21.77
mf10	-	-	-	-	-	24.24
mf11	-	-	-	-	-	26.32

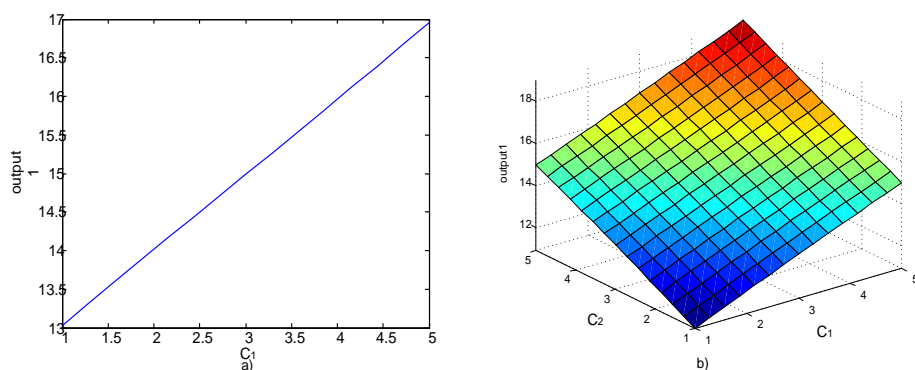


Figure 5: The set of possible solutions of input variables C_1 and C_2

4. TESTING THE ANFIS MODEL

Data for thirty arbitrary alternatives are used for the ANFIS model testing. The Figure 6 presents the differences in obtaining output values by using standard methodology (blue line) and by applying the developed ANFIS model (green line).

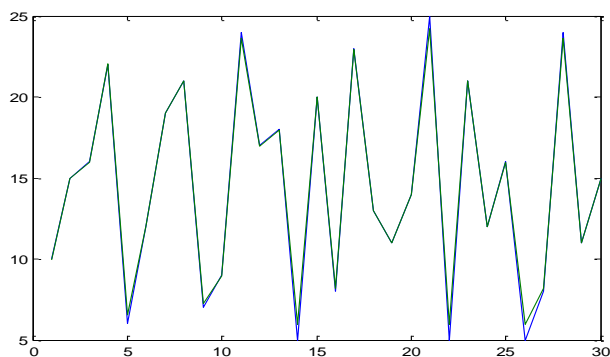


Figure 6: Comparative presentation of output results

As it can be seen in the Figure 6, the differences in obtained values are very small, so it can be considered that the developed ANFIS model provides satisfactory results.

5 CONCLUSION

Analyzing obtained results it may be concluded that developed ANFIS model can successfully evaluate potential earthquake hazard. In other words, standard hazard assessment methodology is successfully translated into the ANFIS model.

By applying the ANFIS model, the assessment has become more sensitive. Conditions are created so that input values need not be integers. When decision-makers hesitate which values to assign to certain criteria they do not have to use only whole numbers, but also the intermediate values. On the other hand, this ensures creating new more detailed scales, using fuzzy logic descriptors and the like.

The sensitivity chart (Figure 5) shows a linear dependence, which should not be a feature of such models. However, this model can be considered only the beginning, that is, the basic model with the possibility of further training with new data. New data would be obtained from the practice of professionals/experts who deal with these issues on the field. This can be deemed another important advantage, compared to the existing methodology.

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DEFENSE PLANNING AT THE LOCAL SELF- GOVERNMENT LEVEL

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Summary: This paper shall consider basics of the defense planning which is of primary importance in the process of the defense system management. Defense planning is based on economic possibilities of the state, i.e. local self-government unit. In planning, longterm, mid-term and annual priorities are clearly defined, thus providing efficiency and cost effectiveness of funds. Defense planning is carried out by creating certain documents i.e. plans and programs for defense system development at the level of local self-government units as well. The planning system, the programing system, budgeting through making plans and programs of development, directly define management of defense resources. Planning of the use of forces is realized through the making of defense plans. By making defense plans, measures, activities and forces for the functioning of defense in the state of war and state of emergency are determined. Defense plans of the local self-government bodies are an integral part of the Defense plan of the Republic of Serbia.

Key words: planning, defense, local self-government, defense resources, Republic of Serbia.

1. INTRODUCTION

Planning is a reflective and creative process with a purpose of finding a goal, i.e. a series of tasks of management bodies to reach the best manner, solution and program for the execution of the set task. Planning is a continuous process of every organization setting goals, forces and means: who, what, when, how and using which methods and actions should do something in a specific task, that is, how to fulfil a preset goal – plan.

In order to be able to fulfil their tasks and satisfy the needs of the society, local self-governments prepare still in peacetime to be able to provide activities for the needs of the defense system forces.

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It is necessary to percieve local self-government activities of particular significance for defense, resource level, distribution and capacities, possibilities for present and future development as well as other issues and problems related to defense.

Thus, an optimal model for preparation of local services for functioning in wartime would be established, which demands that activities of the services be well analized from the point of ability, organization, structure and necessity of transition to wartime organization, with the aim of strengthening the defense capability of the country.

2. DEFENSE PLANNING

„Planning as an activity comprises activities which have an impact on development and function of a social system as a whole. It covers all the fields of human activities and lives through processes of social, economic, spatial and defense development, as well as environmental protection. Planning is conditioned by the degree of development of science, techniques and technologies, as well as the degree of development of production forces and production relations, in the field of social upgrading. If the society is at a

higher level of economic development, the planning is more developed and more perfect.”⁷⁰

Action taking is preceded by planning. Planning is a development process by which one concludes what and how something should be done. It influences the flow of business process as a whole and its parts. This indicates „that planning is not an act, but a process, a process that has no end point. It draws near to a solution, but never reaches it entirely, which is primarily connected with the fact that in the planning process there are changes both in the system which is the object of planning and its surroundings.”⁷¹ From this it can be concluded that planning is a process in which the system is adjusted and influences its surroundings.

When planning defense, assessment of possible types and versions of foreign armed aggression must be taken into consideration, as well as the adopted National Security Strategy of the Republic of Serbia, the Defence Strategy, conditions and characteristics of modern warfare and weaponry, material and technical equipment of the parties to the conflict as well as the weather.

It is also necessary to take into account, the economic, demographic, communication, transport, spatial and urban conditions and opportunities in the territory of the state which affect the mobilization, strategic development, war staffing, financial and health security of the army and the population. The Law on Defense⁷² proscribed as the right and the duty of defense subjects to plan their preparations for the fulfillment of defense tasks.

The manner and process of defense planning is more precisely regulated by the Regulation on the procedure for carrying out the obligations for planning and preparation for the defense⁷³ and the Instruction on defense planning⁷⁴. Defense planning, in addition to reviewing and determining the priority development objectives, tasks and defense needs, also determines compliance with the possibilities of the society for their realization.

3. DEFENSE PREPARATIONS

Preparation for defense is the right and the duty of defense subjects⁷⁵ to plan their preparations for the fulfillment of defense tasks and to undertake measures and actions pertaining to the deployment and use of the Serbian Armed Forces and other defense forces in the state of war and state of emergency.

Defense preparations represent a series of legal, organizational planning, human resources, material, production and other measures and activities taken by the planning subjects in peacetime in order to achieve and maintain a certain degree of preparation of defense forces⁷⁶ for work in the states of war and emergency.

⁷⁰ Stankovic T., Planning, Faculty of Civil Defense, 2004

⁷¹ Milicevic V., Strategic Business Planning, Culture, Belgrade, 1993, page 16

⁷² The Law on Defense, Article 6.

⁷³ „Official Gazette of the Republic of Serbia“, no. 24/2009

⁷⁴ „Official Gazette of the Republic of Serbia“, no. 10/92

⁷⁵ Defense system subjects include the following: citizens, government bodies, companies, other legal entities, entrepreneurs and the Serbian Armed Forces, Law on Defense, Article 2, paragraph 5

⁷⁶ defense forces, in a broader sense, are human and material potentials of the Republic of Serbia, and in the narrower sense, the defense forces, pursuant to the law, are made of organized structures of the defense system subjects, The Law on Defense, Article 4, subclause 2

Preparations are realized for the purpose of functioning of the executive government in the state of war and state of emergency from the standpoint of interest relating to:

- Defense of the country,
- Ensuring full implementation of the mobilization of human and material resources,
- Measures for protection and rescue of the population, material and cultural goods,
- Ensuring the production and service provision for the needs of the Serbian Armed Forces and other defense forces and needs that are related to the life and work of the population.

Defense preparations⁷⁷ are planned, organized and implemented in accordance with the the Defense Plan of the Republic of Serbia (hereinafter: the Defense Plan), regulations and decisions of the competent state bodies.

Assumptions of successful planning of defense preparations

In order for the planning process to be successful, the following assumptions are necessary:

1. normative-legal regulation of the field of defense;
2. preparation of the assessment of military and non-military challenges, risks and threats to the security of the country (hereinafter: Evaluation);
3. organization and preparation of the government bodies and legal entities to fulfill their tasks in the state of emergency and state of war;
3. taking measures and actions to ensure the necessary conditions for the use of the Serbian Armed Forces and other defense forces;
4. taking measures and activities for the protection and rescue of people, material goods and the environment in the state of war and emergency.

4. LOCAL SELF-GOVERNMENT UNITS IN THE PROCESS OF DEFENSE PREPARATION PLANNING

Within their scope of work, local self-government units are responsible for the status of preparations for defense, and the status of preparations of the companies, other legal entities and entrepreneurs through which the needs of the people are directly satisfied, or the tasks of the Defense Plan of the Republic of Serbia are fulfilled⁷⁸.

Local self-government units prepare, make out and update their defense plans in cooperation with the competent body of the Ministry of Defense which are an integral part of the Defense Plan. The authorities responsible for the design, preparation and implementation of defense plans in the bodies of autonomous provinces and local self-government shall be determined by the decisions of the competent authorities in accordance with the law and their statutes.

Local self-governments take a significant role in the organization of the defense and protection functions of the society. With the content of their activities, the local self-governments are primarily facing citizens to meet their medical, social, pedagogical, educational, cultural, art, scientific and other similar needs.

⁷⁷ defense preparations include those activities that are based on the defined defense strategy and are implemented in accordance with the defense plans; The Law on Defense, Article 4, paragraph 1, subclause 8

⁷⁸ The Law on Defense, Article 29, paragraph 1

As part of the defense system planned preparation, the local self-governments are organized by preparing of the competent authorities for the execution of duties and tasks in peacetime, in states of emergency and war, preparing of certain institutions and organizations and public services performed for the local self-government, for which specific tasks are identified in the defence system, as well as preparing other institutions and organizations that perform public service⁷⁹. In accordance with the Law of Defense of the Republic of Serbia, local self-governments are given full responsibility of to regulate their defense planning; it is also important to note that the responsibilities for defense planning have been entirely devolved to the cities, and this applies to the City of Belgrade⁸⁰ and the City of Nis, since their municipalities are active, contrary to the City of Novi Sad and the City of Kragujevac which consist of municipalities but are still passive.

Duties and competences of the City of Belgrade: in the framework of its competence in the field of defense: 1) preparing its defense plans, which are an integral part of the Defense Plan of the Republic of Serbia; 2) taking measures to harmonize preparations for the defense of legal entities in the activities within its competence in defense preparations of the autonomous province and the Defence Plan of the Republic of Serbia; 3) taking measures for the functioning of local government in the state of war and state of emergency; 4) implementing measures to prepare for and taking other measures necessary for the transition to the organization of work in the state of war and emergency; 5) performing other duties specified by the law. In the state of war and emergency, the authorities referred to in paragraph 1 of this Article shall enforce laws, other regulations and general acts of the National Assembly and the Government, as well as regulations issued under the jurisdiction of the autonomous province and bodies of local self-government.⁸¹

From the point of organizing the defense, the local self-governments act in peace within their regular activities in training, education and upbringing of citizens, as well as prepare the population for opposition to all forms of threats in peace and war.

Together with other subjects of society, local self-government units, represent an integrated whole and each within its scope of work contributes to the functioning of the defense system. For the successful, good planning, functioning of the Defense Plan employment of competent staff is necessary, because it is a complex problem, which demands higher education, and above all practice. It is therefore necessary to conduct regular training at all levels, particularly at the local level, because past experience has shown how important the role of local self-governments is, and that they form the backbone of the functioning of all the systems including the system of defense, therefore it is necessary to coordinate the activities of national defense, civil protection, so that an effective and efficient system could be created in time.

5. CONCLUSION

Planning the preparation of local self-governments should be a steady, methodical, organized, comprehensive, rational and efficient process, based on the real possibilities and in compliance with the existing and potential challenges, risks and threats to the security and defense of the Republic of Serbia.

⁷⁹ Stankovic T., Planning, Faculty of Civil Defense, 2004

⁸⁰ decentralization, with the City of Belgrade being responsible for its 17 municipalities, where it is necessary for all the municipalities to be bound into one unified plan which is an integral part of the Defense Plan of the Republic of Serbia

⁸¹ The Law on Defense, Official Gazette, Belgrade, 2007, 2009, 2015, page 41

Unique methodology for preparation, development, adoption, compliance and updating of the plans will provide the maximum level of connectivity of the subjects (defense system) planning in achieving and finding optimal solutions for the planned objectives and create preconditions for efficient execution of set tasks and obligations under the Defense Plan in the state of war and emergency.

In terms of emergency and the state of war it is necessary to ensure the operation of the local self-government, in order to achieve the objectives of the defense and to satisfy the basic needs of the population. Institutions and public services have obligations in the states of emergency and war, and to fulfill the tasks they must prepare still in peacetime.

The activity of the local self-government unit has a special role in wartime, which reflects on the issues of defense preparation planning. To achieve high-quality preparation of activities for the functioning of public services in the war, the resources, the allocation, the degree of meeting the needs, possibilities of present and future development and other issues relevant for the defense should be thoroughly examined.

When planning preparations for the functioning of public services in wartime, we start from the achieved level, needs and development opportunities, as well as strategic and doctrine documents in the defense of the Republic of Serbia. As part of the defense system, local self-government units have the task within their activities to plan, organize, prepare and be trained to work in the states of emergency and war.

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ACTIVITIES OF PUBLIC ENTERPRISE `SRBIJASUME` ON THE MITIGATION OF NEGATIVE EFFECTS OF ICE WAVE ON FORESTS AND THEIR ENVIROMENT IN EASTERN SERBIA IN 2014

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Abstract: In the period between November 27th 2014 and December 7th 2014, a cold wave swept across Eastern Serbia (in the altitude range of 300 to 700 m/AMSL) causing the occurrence of large ice breakages and a large number of fallen and uprooted trees, that resulted in unprecedented damage to forests. In order to alert the public and raise awareness about the consequences of this kind of natural disaster, this paper provides the most important data about the extent of damage caused by ice breaks and uprooting trees on forest, regardless of ownership. The total damage amounted to 43,305.78 ha, where is 1,874,046 m³ of dying and damaged trees were recorded, also regardless of ownership. The extent of the inflicted damage can characterize it as elementary disaster. The level of ecological and economical damage within the affected area is estimated and the analysis of the scope of their negative impact on enviroment is given. In orded to mitigate the consequences, the appropriate activities are identified and undertaken by the public enterprise "Srbijašume". Furthermore, certain guidelines for future directed management after natural disasters are proposed.

Keywords: cold wave, ice breaks, uprooted trees, forest, environment

1. INTRODUCTION

Healthy environment and comprehensive and timely announcements about its current state is a right guaranteed by the Constitution of the Republic of Serbia. According to the Constitution regulative each individual, as well as the Republic itself, is responsible for environment conservation and protection.

Forests are of extreme importance to humans. In essence, forests provide raw wood supply as an energy source and ecologically-efficient construction material. Other forest benefits include carbon dioxide assimilation, accumulation as organic matter, soil protection, improvement of the air and water quality, esthetic, recreational and other social values. In that sense, importance of commercial and non-commercial functions of forest ecosystems, as important factors of the biosphere, is essential and immense. Forest ecosystems also have considerable impact on climate change. In the light of the

aforementioned, Baković and Kisin (2012) notice that “... sustainable management of natural environment, natural balance preservation, biodiversity conservation and improved environment quality are imperative of modern human society”. Natural resources are natural values of Serbia, where forest ecosystem takes central role.

In 2014. forest ecosystems were in most of Serbia affected by snow and wind, floods, landslides, insects calamities and cold waves. Such scale of negative influences of “natural hazards” on a relatively small area and in a relatively short time period were unprecedented in Serbian forestry. Consequences of these adverse effects were very high, and had a strong impact on the state and the quality of the environment in these endangered areas. Taking into account the complexity of forest ecosystems, the recovery from these negative consequences, especially from the cold wave, will never be complete, and even in part can be characterized as “highly uncertain”. The previous statement additionally complicates the fact that the level of ecological consciousness in Serbia, in some cases, can be characterized as “controversial” (Aleksić P. et. al 2013).

In the last decade of November and the first decade of December of 2014, a cold wave affected Eastern Serbia and caused substantial damage in state-owned and privately-owned forest properties, mostly in the form of ice-breaks. They affected forests, orchards, private houses, public and forest roads, wildlife, etc. The public enterprise “Srbijasume”-Belgrade, suffered enormous damage in the Forest Management Units of Boljevac, Nis, Kucevo, Despotovac and Krusevac. The damages was also substantial on private properties and in private forests.

According to Zaric (2014), freezing-rain comes together with Kosava wind, which is always followed by a rising temperature inversion. The author notices (Zaric, 2014) that when this wind blows, the temperature doesn't decrease with the increasing altitude, but vertical temperature gradient on emagram starts with moderate isotherm and after that goes into inversion, with the strong air mixture in the lower layer. On a wider area of Eastern Serbia, the afore-mentioned period was very cold. Together with the Kosava wind, which warmed-up the lower air layers, this weather made conditions for the occurrence of ice-rain. It left large amounts of ice on tree trunks and branches. With time, the amounts of ice on trees got bigger and bigger, and the burden of ice first broke twigs, then branches and finally whole tree crowns (in halves or thirds) and boles. In same cases the pressure of ice uprooted whole trees.

The aim of this research paper was to evaluate ecological and economic damage in state-owned and private forests caused by the cold wave in 2014. Through the analysis of its negative effects on forests and the state and quality of environment, we will present information about the consequences of the damage in state-owned and private forests of this part of Serbia. The obtained data on the extent and state of the inflicted damage will help PE “Srbijasume” plan the necessary activities on damage repair. Finally, the conclusion should contain some important guidelines for adequate management of natural disasters, with the aim of minimizing damaging effects and possibly returning to previous state.

2. MATERIALS AND METHODS

This paper is based on various forest planning data of the “Srbijasume” enterprise. The proportion of forested and unforested areas, share of forests according to different species, volume and volume increment are presented in tables. The data were

taken from the forest stand inventory, performed by professional staff employed at "Srbijasume", on 31.12.2014.

The data on the cold wave damage were taken from the Action plan - internal documents of the public enterprise "Srbijasume". The data are grouped and presented for each forest management estate, but also collectively, with regard to their structure, aims and operational tasks.

The area affected by the cold wave on the territory of the public enterprise "Srbijasume" and on the territory of privately-owned forests, was determined using some well-known techniques (terrestrial, GPS technology, aerophotogrammetry). GIS software was used to map the affected forest area (Hartebrodt et al. 2014)

The volume of wood affected by the cold wave in the forests managed by PE "Srbijasume" was determined by survey and assessment. One part of wood volume was determined through operational management plans (trees marked for removal according to the operational management plan for 2015), while for the forests whose rehabilitation will be undertaken over the period 2016-2018 the assessment was carried out. The cold wave damage was grouped in two categories: dying trees and damaged trees. Wood volume of the cold wave damaged trees was not categorized into previously mentioned groups in privately-owned forests.

With regard to the set goals, the methodological procedure used in this research is basically in the form of analysis and synthesis. We were guided by international and domestic literature, dealing with this topic. According to the afore-mentioned, this paper is of descriptive-research character.

3. RESULTS AND DISCUSSION

3.1. Growing stock of PE "Srbijasume"

The public enterprise for forest management "Srbijasume", manages the greatest part of state-owned forests and forest land in central Serbia. At the same time, the enterprise offers advisory services and perform professional tasks in private forests. Table 1 shows the situation in state-owned forests and forest land managed by PE "Srbijasume". It can be seen that "Srbijasume" manages 896,266.06 ha of overgrown and bare forest land, in the ratio of 86%:14%, which can be characterized as a relatively favorable ratio.

Table 1. Structure of state-owned forests and forest land managed by PE "Srbijasume".

Public enterprise "Srbija sume"	Total area	Forest and forest land				Other land			Occupancy	Someones property	Overgrown		Bare		Total
		Total	Forest	Plantation	Forest land	Total	Infertile	Other purpose			Overgrown		Bare		
		ha	ha	ha	ha	ha	ha	ha			ha	ha	%	ha	%
1	2 (3+7+10+11)	3 (4+5+6)	4	5	6	7 (8+9)	8	9	10	11	12 (4+5)	13	14 (6+7+10)	15	16 (12+14)
Total	927,1 13.83	847,196. 44	743,457. 38	24,056. 49	79,672. 57	47,701. 54	26,752. 53	20,949. 01	1,368. 08	30,847. 77	767,523. 87	86	128,742. 19	14	896,266. 096

Table 2. gives basic information on area, volume stock, volume increment and planned amount of utilization per year in state-owned forest managed by PE `Srbijasume`. The same table also contains the information about privately-owned forest in which the enterprise conducts expert and technical activities.

Table 2. Basic information on state-owned forests managed by PE `Srbijasume` and private forests in which the enterprise gives advisory services and perform professional tasks.

PE `Srbijasume`	Managed state-owned	Private forest s
Area (ha)	896,266.06	1,176,139
Stock volume (m ³)	127,899.087	131,854,705
Mean stock volume (m ³ /ha)	167	112
Volume increment (m ³ /ha)	3,424,769	3,299,130
Mean volume increment (m ³ /ha)	4.5	2.8
Utilization per year (m ³)	1,913,352	695,858

PE `Srbijasume` carries out its public and economic mission through 19 enterprise segments (17 forest estates⁸², Office for planning and projecting in forestry and Protection workshop). Forest estates (FE) comprise 67 forest administrations and 15 working units, which represent the primary level for planning and organizing forest management affairs.

3.2. The state of damaged forest in the region affected by the ice storm

Table 1 gives information about the damaged area in state-owned forest managed by PE `Srbijasume`. The overview is given for each forest estate, silvicultural form and in total.

Table 3. Areas affected by ice breakages and uprooting in state-owned forests – PE `Srbijasume`.

Forest estate	High forest	Coppice forest	Artificially established forest	Total
	ha	ha	ha	ha
"Severni kučaj"- Kučevo	1,542.70	35.04	34.86	1,612.60
"Timočke šume"-Boljevac	5,011.10	4,378.22	671.40	10,060.72
"Južni kučaj"-Despotovac	45.80	115.34	14.00	175.14
"Rasina"-Kruševac	-	807.99	19.11	827.10
"Niš"-Niš	1,701.41	3,660.78	1,382.03	6,744.22
Total	8,301.01	8,997.37	2,121.40	19,419.78

Of all state-owned forests, the ice storm caused the highest damage in FE `Timočke šume`-Boljevac, where it affected more than 10,000 ha. On the other hand, the smallest damage was caused in FE `Južni Kučaj` where it amounted to something above 175 ha

⁸² After the changes at 1999. year, Forest estate "Ibar" from Leposavic is observed out of PE `Srbijasume` (Baković and Stajić 2015)

(Table 3). By municipalities, the greatest destruction was observed in Timok forest area, especially in the municipalities of Boljevac (5,856.16 ha), Zaječar (1,144.91 ha) and Knjaževac (1,169.80 ha), while smaller damage was caused in the municipalities of Negotin, Kladovo, Donji Milanovac and Bor. Great damage was also recorded in Niš forest area, especially in the municipality of Sokobanja, where the damage amounted to 4,817.59 ha. In the same forest area, the destruction was registered in the municipalities of Bela Palanka (1,022.32 ha) and Aleksinac (904.31 ha). The total extent of damage inflicted to state-owned forest was estimated at 19,419.78 ha.

Table 4. The area affected by ice breakages and uprooting in private forest.

Forest estate	Total damage- for clear cut		Partial damage- for sanitary cut		Total	
	ha	m ³	ha	m ³	ha	m ³
"Severni kučaj"- Kučevo	10	1,250	450	2,600	460	3,850
"Timočke šume"-Boljevac	566	60,584	21,022	159,285	21,588	219,869
"Južni kučaj"-Despotovac	-	-	20	400	20	400
"Rasina"-Krusevac	-	-	-	-	-	-
"Niš"-Nis	82	6,039	1,736	35,906	1,818	41,945
PE `Srbijasume`	658	67,873	23,228	198,191	23,886	266,064

Table 4 shows data on the area with recorded damage in privately-owned forests. The overview is given by forest estate, extent of damage (total and partial) and in total. The affected private forests are located in the following districts: Niš, Timok, Rasina, Pomoravlje and Braničevo. The damage was recorded in 10 municipalities, and the highest amount was registered in Boljevac (9,149 ha), Zaječar (7,908 ha) and Bor (2,717 ha), which makes more than 80% of the total. The total scope of damage in privately-owned forests was estimated at 266,064 m³.

Table 5 gives information about the damage to the growing stock in state-owned forest managed by PE `Srbijasume`. The overview is given by forest estate, level of damage (dying and damaged trees), silvicultural form and in total.

Table 5. Damage caused to the growing stock in state-owned forest- PE `Srbijasume`.

FE	Dying trees				Damaged trees				Total
	High	Coppice	Artificially established forest	Total	High	Coppice	Artificially established forest	Total	
	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	
ŠGSKK ⁸³	5,056	107	965	6,128	1,740	-	-	1,740	7,868
ŠGTŠB ⁸⁴	222,299	222,122	64,977	509,398	219,012	207,726	43,546	470,284	979,682

⁸³ŠGSKK- Forest estate "Severni kučaj"- Kučevo;

ŠGJKD ⁸⁵	3,364	4,581	1,914	9,859	-	1,481	-	1,481	11,340
ŠGRK ⁸⁶	-	14,737	5,656	20,393	-	18,853	72	18,925	39,318
ŠGNN	69,685	140,909	98,833	309,427	80,867	126,781	52,699	260,347	569,774
Total	300,404	382,456	172,345	855,205	301,619	354,841	96,317	752,777	1,607,982

State-owned forest recorded 1,607,981 m³ of dying and damaged trees (Table 5). Of all state-owned forests, ice storm caused the greatest damage in the forest estate 'Timočke šume'-Boljevac, with 61% of the total damage, 53% of which were dying and 47% damaged trees. Regarding silvicultural form, coppice forests suffered the greatest damage to the growing stock (46%), followed by high forests (37%) and artificially- established forest (17%).

3.3. The necessary funds for the repair of caused damages

According to Action plan, the fund necessary for the repair of damage caused by the cold wave in Eastern Serbia amounts to 438.306.043 dinars or 3.652.550 €. This fund is intended for: collection of information about the extent of the damage, documentation preparation, registration and marking of damaged trees, protection measures, forest establishment, silvicultural measures, appropriate logistics, revision of existing forest management documents and their harmonization with the actual situation etc.

Beside that, multi-functional forest management concept requires the assessment and categorization of the damage on multiple-use forest functions. Therefore, it is clear, that previously mentioned fund is not final. Multiple-use forest function is a concept dated from the second half of the last century. The cost of damage to multiple-use forest functions caused by cold wave approximately amounts to 35 M/€.

3.4. Management of repairing the consequence of natural disasters in the case of ice storm of 2014. year

After defining the extent of the inflicted damage, and taking into account the possibility of further negative implications on the one hand, and complexity of forest ecosystems on the other hand, we require legally justified, competent, fast and efficient reaction in the direction of adequate recovery from the damage. The knowledge based on previous experience is an important mechanism in the direction of recovery and it must be considered before making any important decisions in the field of natural hazard management.. Other experiences are valuable, because with their help, bad solutions and eventually weaknesses can be minimized.

Consequences of the effects of natural hazards on forests initialize implementation of reaction, where first step represent priority identification of problems and questions.

- determination of the extent of damage;
- shortage of experience;
- complexity of forest ecosystems (it is slow and hard to return to previous state);

⁸⁴ ŠGTŠB- Forest estate "Timočke šume"-Boljevac;

⁸⁵ ŠGJKD- Forest estate "Južni kučaj"-Despotovac

⁸⁶ ŠGRK- Forest estate "Rasina"-Kruševac

- forestry complexity (registration and marking of damage, tree felling, assortment production, pulling and skidding procedures, transport, sale - disorder on the assortments market);
- priority conflict (`environmental economy` vs classical economy);
- lack of methodology related to the collection and processing of information about the damage extent;
- lack of methodology related to the collection and processing of information about the assesment of the damage linked to multiple-use forest functions and non-ecological level of damages;
- lack of information needed for the total assessment of the ecological level of damage;
- defining and ranking of priorities before starting the recovery procedures;
- society expectation for immediate solutions and many other questions.

The listed issues linked to management of natural hazards require effective and complete solutions. In this situation that relate to the cold wave in eastern part of Serbia, but also in similar circumstances, it is important to respect and ensure the following:

- health and safety of people;
- law compliance;
- securing maximal support from state authorities;
- absolute coordination of all members engaged in the recovery of the damage;
- timelines for recovery;
- mechanism for absolute recovery of the caused damage (laws, regulations, financial support);
- estimate of the effcet of the damage on people`s health and environment;
- preparation of analysis related to ecosystem disorder caused by natural hazards;
- change of laws and regulations with purpose of efficient management in case of some new natural disasters.

In respect to the afore-mentioned, public enterprise `Srbijasume` in cooperation with state authorities, took the measures illustrated in Figure 1.

3.5. Consequences of natural risk on the environment

Environment protection is based on the rational use and conservation of the natural resources: air, water, forest, mineral resources, biodiversity etc. Multifunctional approach in forest resource management, bring society convenience of integral use, opportunity to fulfill all the needs in relation to forest ecosystems, respectively. Natural hazard in the form of the cold wave, that affected entire east Serbia, caused broadest damage on natural resources, and especially on forest and their beneficial function (BF)⁸⁷. The overall impression is that society, unfortunately, not give proper attention for BF and their protection, until such time when useful functions are missing, which is essentially important for whole environment. First real evaluation of BF was performed 80s years of last century in Germany.

According to Standing committee for EU forestry, as well as Oesten and Roeder (2001), there is 4 different categories of BF, with 12 main function and 77 in total:

⁸⁷ BF-beneficial forest function;

- I. Ecological: protecting water, soil and health-air= 28 function,
- II. Biosphere: protecting biodiversity and regulating climate=11 function,
- III. Social: tourist, recreation, sport and education = 24 function and
- IV. Traditional: spiritual, cultural and historical =14 function.

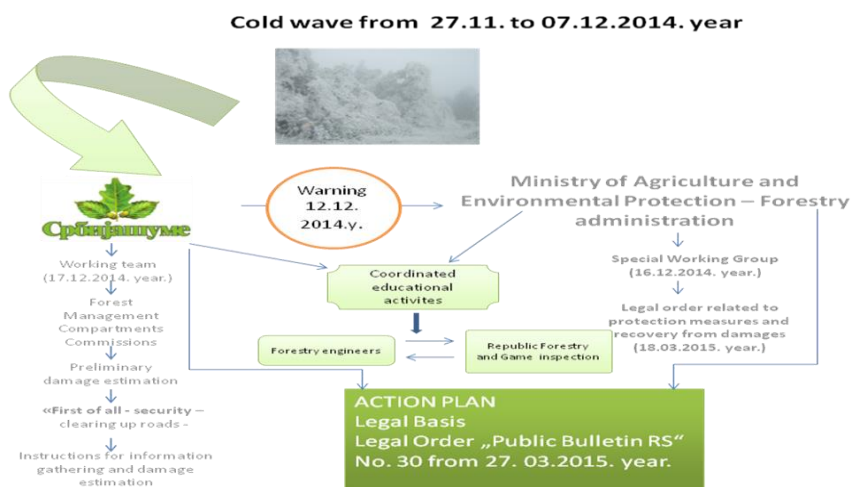


Figure 1. Activities of public enterprise `Srbijasume` after the cold wave has begun in East Serbia.

Cold wave which affected east Serbia, as well as all other similar weather disasters, endanger a number of beneficial forest function. Importance of forest ecosystems for stability entire environment (Figure 2), suggest that consequences of ice storm would have exceptionally negative effect on condition and quality of environment, even in future.

In the end, it's necessary to conclude, that beside material damage, real level of consequences caused by this natural disaster, unfortunately will never been determined and compensated to forest and society. One of the most important reason for that is absence of methodology for gathering and processing information about level of damage, as well as clearly defined legislation which guarantee financial support from relevant state institution.

4. CONCLUSION

Ice storm which affect entire East Serbia in autumn 2014, caused appearance of large ice-breaks and uprooted trees, making unrecorded natural resources damage, especially on beneficial forest function.

Caused damage include following forest estate areas: „Timočke šume“-Boljevac“, „Niš“-Niš, „Severni Kučaj“-Kučevo, „Južni Kučaj“-Despotovac, „Rasina“-Kruševac.

Entire damage is on 43,305.78 ha (19,419.78 ha – state-owned forest and 23.886 ha private forest), and it's evidenced 1,874,046 m³ (1,607,982 m³ state-owned forest and 266.064 m³ private forest) destroyed or partially damaged wood volume.

Destruction caused by cold wave can be characterized as elementary disasters.

The funds necessary for repair these damages exceed 3,6 M/€, and damages caused to BF are estimated more than 35 M/€.

Ice wave provoked negative consequences on state and quality of the environment, with negative tendency in future.

Reparation of caused damages is not possible for users and owners to finance alone. They need help from the state, others states, foreign fond, social responsible company and entire society.

Regardless complexity of this natural disaster, PE `Srbijasume` in cooperation with relevant national authorities, primarily with Ministry of agriculture and environmental protecting – Department for forest, managed the consequences of this natural disaster very professional and well-coordinated.

In future, it's necessary to establish clear methodology for gathering and processing information about all kind of observed damages. Besides that, legislation and bylaws should be adapted to secure financial background.

Until now, the scale of this disaster are not sufficiently presented to professional, especially the general public. In the next period its necessary to do everything what is possible for affirmation, in order to reduce level of consequences for natural resources (forest), quality and state of environment.

Many question and dilemmas about managing with consequences of natural risks are still open. In next period, it's also necessary to give answers to them as precisely as possible, in order to neutralize consequences of this natural disasters.

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THE PARTICIPATION OF THE INSTITUTE FOR BIOCIDES AND MEDICAL ECOLOGY IN THE STATE OF EMERGENCY DURING THE FLOODS ON THE TERRITORY OF BELGRADE IN 2014 -RISK MANAGEMENT FOR EPIDEMICS AND PARTICIPATION IN ELIMINATING THE CONSEQUENCES OF FLOODS ON HUMAN HEALTH-

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Abstract: On May, 16th 2014. water spilled from the bed of Kolubara and flooded Obrenovac. About 25,000 people were evacuated and placed in collective centres throughout Belgrade. There was a deterioration in hygienic conditions and an increased influence of biological agents which threaten the health. The Institute coordinated the implementation of DDD measures. Professional, experienced and fully equipped teams were in the field to carry out the disinfection. In a series of implemented antiepidemic measures, 10.000.000m² were disinfected. Neither the population of the flooded areas, nor the employees of the Institute were affected by infectious diseases in an epidemic extent during the period of application of disinfection measures or two months later.

Key words: antiepidemic measures, deterioration in hygienic conditions, dangerous influence of biological agents, threat to the health, flooded areas

1. INTRODUCTION

The floods in Serbia came after a heavy rainfall in the region. A large amount of rainfall led to the formation of torrential flows, flooding and the activation of numerous landslides. Emergency state was declared throughout the entire territory of Serbia. On May, 16th a large quantity of water spilled from the bed of Kolubara and flooded Obrenovac and its surroundings. The evacuation of the entire town and neighboring villages began, in which a number of rescue units and departments were involved (the army, the police, fire department, special forces). About 25,000 people were evacuated from the area of Obrenovac. They were placed in collective centres throughout Belgrade. The largest collective centres for evacuated persons were: Belgrade Fair (over 500 people), Belgrade Arena, Pionir sports hall (around 250), sports halls Stari and Novi DIF, Šumice sports center, other sports centers, numerous schools, hotels, dorms etc. The flood leads to sudden changes in living conditions: damage and destruction of housing and public utility facilities, disruption of water and food supply, lack of resources for common and personal hygiene and the migration of the population. The level of wastewater reaches the maximum and fecal water eventually overflows from the sewage system. All of these conditions combined contribute to the deterioration of sanitary and epidemiological situation. The combination of the presence of biological hazards in wastewater and the conditions in flooded areas cause an increased influence of biological agents that cause infectious diseases which threaten the health of humans and animals.

Deteriorating sanitary and epidemiological situation causes the weakening of the protective system, both institutional and natural, due to the cumulative effect of stress on the weakening of the immune status. Defensive lines against infectious diseases are compromised and there is increased risk of emerging and spreading of infectious diseases to epidemic proportions.

As a unique healthcare institution in Serbia, specializing in monitoring and controlling the vectors of infectious diseases, disinfection and sterilization, as well as monitoring the efficiency and ecotoxicological parameters of biocides for the purpose of preserving and improving the environment, The Institute for Biocides and Medical Ecology has become a part of The National Strategy for Protection and Rescue, with the objective to protect life, health and property of citizens, environment and cultural heritage of the Republic of Serbia, and also a part of the national CBRN (chemical, biological and radio-nuclear safety) team. By the decision of the City Council, the Institute was put on the list of the companies and institutions qualified for the enforcement of safety measures and rescue on the territory of the city of Belgrade, with the obligation to take part in: formulating threat assessments and plans for responding, provision and availability of resources, integrating itself in the system for protection and rescue at a national, city and local level, information management through information systems and reporting according to the procedure, and positing itself within the communication mechanisms on city level between The City Institute for Public Health, Department of Health and The Ministry of Health. According to the decision of The Emergency Headquarters, The Institute for Biocides and Medical Ecology begins with the implementation of DDD measures in areas where the water had receded and newly formed collective centres for receiving evacuees from flooded territories, including the premises where Emergency Headquarters was located, as well as setting up disinfection barriers and distributing disinfectants to citizens and institutions engaged in the clearing up of the terrain.

2. RESOURCES AND METHODS

As an institution accredited by the Agency for Accreditation of Healthcare Institutions for a period of 7 years, The Institute for Biocides and Medical Ecology implements an integrated system for quality management with standards: ISO 9001:2008 (The system for quality management), ISO 14001:2005 (The system for environmental management), OHSAS 18001:2008 (The system for management of health preservation and occupational safety), while the implementation of ISO 31000, which describes and defines the process for risk management, is in progress, which will lead to improvements in the existing system for risk management and the designing of a new one. As a part of The National Strategy for Protection and Rescue, and a qualified institution for the enforcement of safety measures and rescue on the territory of the city of Belgrade, The Institute implements the system for risk reduction and limiting the consequences of natural disasters by: enforcing established operating procedures, using adequate technical equipment, increasing operational readiness by having well-trained staff, which is achieved through education of employees, who regularly take courses in: response in an emergency situation – fire, safety in working with biocides, first aid and providing care in case of an accident, safe handling of chemical waste, as well as demonstration exercises in case of fire, floods and providing care for the injured. In the attempt to improve the capacity for response in a state of emergency, and protection of the

population and the health of people in the local community, The Institute for Biocides and Medical Ecology has established strategies, risk assessments, list of risks, risk management plans, plans for improving occupational safety and health, in order to improve preparation for responding in the event of a disaster, in terms of communication, leadership and coordination in the local community. Based on the Strategy for risk management, plans, procedures and guidelines have been established and implemented in the Institute relating to the potential risks. These documents guide the application of preventive measures which serve to prevent or minimize the occurrence of risks. (Table 1.)

Table 1. Relevant documents

Number	Document
1.	Strategic plan of the Institute for Biocides and Medical Ecology
2.	Operating plan of the Institute
3.	Operating plan of the Institute – the first revision of the operating plan, 25/04/2013
4.	The strategy for preventing adverse events
5.	The plan for managing adverse events for 2013, 14/09/2013
6.	The plan and programme of measures for improvement of occupational safety and health, 17/10/2013
7.	The plan for conduct in mass disasters, large-scale epidemics that threaten the health of the citizens, accidents or state of war, 10/10/2013
8.	The plan for conduct in mass disasters and accidents at the municipal level of the municipality of Cukarica – state secret, 10/10/2013
9.	The plan of implementation of the risk assessment process for all the workplaces in the Institute, 11/10/2013
10.	The plan of response in a state of emergency - fire, IBME.IP12-01
11.	The plan of response in a state of emergency - poisoning, IBME.IP12-01
12.	The plan of response in a state of emergency – chemical spill, IBME.IP12-01
13.	The method of notification of subjects in case of accident - external communication, 15/10/2013
14.	The method of notification in case of accident in the Institute - internal communication 15/10/2013
15.	The procedure for management of health preservation and work-related safety
16.	The procedure for hazard identification and risk assessment
17.	The notification procedure in case of an emergency or accident
18.	The procedure for the use of protective equipment in collecting of hazardous waste
19.	The procedure for maintaining hand hygiene of healthcare workers and other Institute employees
20.	The procedure for identifying and approaching adverse events
21.	The procedure for organizing training courses for working with biocides
22.	The procedure for the storing and handling hazardous materials
23.	The procedure on the use of protective equipment in the DDD sector of the Institute
24.	The procedure for investigating the incident and in case of work injury
25.	The procedure on the use of machinery and equipment in service
26.	The procedure for managing fire safety measures
27.	The procedure for sorting, packing, storing and permanent disposal of waste
28.	The procedure for treatment of packaging waste

29.	The procedure for treatment of hazardous waste
30.	The instructions for safe conduct when dealing with toxic chemicals, IBME.OU0
31.	The instructions for conduct in case of fire, IBME.OU02
32.	The instructions for the use of personal protective equipment, IBME.OU03
33.	The instructions for conduct in a state of emergency , IBME.OU05, 15/10/2013
34.	The instructions for the use of a protective mask, IBME.OU08, 15/10/2013
35.	The instructions for protection from falling, slipping or tripping, IBME.OU09, 15/10/2013
36.	The instructions for administering first aid, IBME.OU04, 15/10/2013
37.	The instructions for the use of personal protective equipment when performing disinsection, IBME.OU07
38.	The plan for a state of emergency in the Institute, 15/10/2013
39.	The instructions for conduct in an accident – the area occupied by chambers for sterilization with ethylene oxide, 17/10/2013
40.	Expert methodological guide for waste management ,18/10/2013
41.	The plan of implementation of the risk assessment process for all the workplaces in the Institute, 15/11/2013
42.	Evacuation plan for the Institute by floors, 02/04/2014
43.	Basic training program in protection against fire - the consent obtained from the Board for states of emergency, 15/04/2014

In the process of dealing with the consequences of floods, there are two stages to implementing DDD measures. In the first stage, the stress is on removing the immediate threat to life and health, therefore we disinfect drinking water and waste, vehicles, temporary housing, corpses of humans and animals, and disinfection measures in healthcare institutions and hand hygiene are enhanced. In temporary and newly formed settlements, pest and rodent control is indicated, due to favorable conditions for their overgrowth and the fact that they represent reservoirs for many infectious diseases. In the second phase, which focuses on cleaning up of the terrain, remediation of the consequences and minimization of the causes for further threat is carried out, and preventive health care is implemented in a planned and systematic manner.

Floods endanger the lives and health of the population due to the presence of biological hazards (agents). Biological hazards are microorganisms including those that are genetically modified, cell cultures and human endoparasites, which can cause infection, allergy or toxicity. Biological hazards are classified into four risk groups according to the level of potential risk of infection:

Group 1 biological hazard - unlikely to cause disease in humans.

Group 2 biological hazard – causes disease in humans, unlikely to spread to the environment, measures of prophylaxis and treatment available.

Group 3 biological hazard - causes severe disease in humans, poses a serious threat to the employees, can spread to the environment, effective measures of prophylaxis and treatment mainly available.

Group 4 biological hazard - causes severe disease in humans, poses a serious hazard to employees, great risk of spreading to the environment, effective measures of prophylaxis and treatment are generally not available.

In managing the risk of biological hazards which exist in flood waters, the most important aspects are: identification of biological risk and impact assessment of identified risks to the health of employees and the health of the population in the said environment, as well as implementation of measures for the protection of employees (mandatory occupational prevention measures) and the plan for application of general and specific DDD measures for protecting the population against infectious diseases.

Biological agents which can be found in wastewater and in the immediate vicinity of wastewater in a flooded area belong to groups 2 and 3 in the classification of biological hazards, and are numerous (Table 2. and Table 3.) [4][5]

Table 2. Potential pathogens in wastewater

Biological hazard	Type of biological hazard	Disease	Symptoms	Classification
BRUCELLA ABORTUS	Bacteria	Brucellosis (undulant fever)	Infectious syndrome (temperature, fatigue, muscle aches, headache, vomiting), diarrhea, haemorrhaging	3
BRUCELLA CANIS	Bacteria	Brucellosis (undulant fever)	Infectious syndrome, diarrhea, haemorrhaging	3
BRUCELLA MELITIENSIS	Bacteria	Brucellosis (undulant fever)	Infectious syndrome, diarrhea, haemorrhaging	3
BRUCELLA SUIS	Bacteria	Brucellosis (undulant fever)	Infectious syndrome, diarrhea, haemorrhaging	3
CAMPYLOBACTER JEJUNI	Bacteria	campylobacteriosis	Infectious syndrome, diarrhea, haemorrhaging	2
CAMPYLOBACTER COLI	Bacteria	campylobacteriosis	Infectious syndrome, diarrhea, haemorrhaging	2
PSEUDOMONAS MALLEI	Bacteria	glanders	Purulent, ulcerative lesions of the skin, pneumonia, sepsis	2
PSEUDOMONAS AERUGINOSA	Bacteria	Pseudomonas infection	Infection of the eye, ear, myocarditis, infection of the respiratory tract, urinary tract infection...	2
SALMONELLA ENTERITIDIS	Bacteria	salmonellosis	Alimentary toxoinfection, temperature, vomiting, diarrhea - the possibility of septic forms	2
SALMONELLA OTHER SEROTYPES	Bacteria	salmonellosis	Alimentary toxoinfection, temperature vomiting, diarrhea - the possibility of septic forms	2
SHIGELLA DYSENTERIAE	Bacteria	dysentery	Infectious syndrome, severe abdominal pain, bloody diarrhea, slimy stools	3
SHIGELLA FLEXNERI	Bacteria	shigellosis	Infectious syndrome, severe abdominal pain, bloody slimy diarrheas	2
VIBRIO CHOLERAЕ	Bacteria	cholera	Epigastric pain, nausea, vomiting, fatigue, diarrhea, dehydration, hypovolemic shock	2
PROTEUS MIRABILIS, VULGARIS, PENNERI	Bacteria	Proteus infection; enterobakteriosis	Urinary tract infections, meningitis, wound infections	2
PROVIDENCIA SPP.	Bacteria	Providencia infection; enterobakteriosis	Urinary tract infections, genital infections, enterocolitis	2
KLEBSIELLA PNEUMONIAE, OXITOCA	Bacteria	pneumonia; enterobakteriosis	Respiratory tract infections, pneumonia, meningitis, enterocolitis, sepsis	2

LEPTOSPIRA	Bacteria	leptospirosis	Infectious syndrome (temperature, fatigue, muscle aches, headache, vomiting), bleeding from the nose and in the conjunctiva, meningitis, renal and liver failure	2
MORGANELLA MORGANI	Bacteria	enterobakteriosis	Urinary tract infections, genital infections	2
ENTEROCOCCUS	Bacteria	enterococcosis	Urinary tract infection, skin infections, bacterial endocarditis, sepsis	2
ENTEROBACTER	Bacteria	enterobakteriosis	Urinary tract infections, sometimes respiratory	2
CITROBACTER	Bacteria	enterobakteriosis	Infections of the digestive system, septicemia, meningitis	3
ESCHERICHIA SPP.	Bacteria	E. Coli infection; enterobakteriosis	three-day passenger diarrhea ... bloody diarrhea	2
ASCARIS SPP	Parasite	ascariasis	Stomach discomfort, pain, and occasionally diarrhea	2
BALANTIDIUM COLLI	Parasite	balantidiosis	Diarrhea, bloody stools	2
ENTAMOEBIA HISTOLITICA	Parasite	amoebiasis	Diarrhea, Entamoeba syndrome, bloody stools, liver abscess, jaundice	2
GIARDIA LAMBLIA	Parasite	Giardia infection	Short-term or long-term diarrhea, subfebrile temperature, headache, fatigue	2
ENTEROVIRUSI (EHO, KOKSAKI)	Virus	enterovirosis	Infectious enteroviral colitis, enteroviral Respiratory Syndrome, enteroviral myocarditis syndrome	2
HEPATITIS A, E	Virus	Infectious hepatitis	Hepatitis / hepatic inflammation, fatigue, loss of appetite, nausea, _ vomiting, jaundice of the skin and mucous membranes	3

Table 3. Potential pathogens in the immediate vicinity of wastewater in a flooded area

Biological hazard	Type of biological hazard	Disease	Symptoms	Classification
WEST NILE VIRUS	Virus	West Nile fever	Fever, headache, fatigue, meningitis, encephalitis	3
TICK BORN VIRUS	Virus	tick-borne encephalitis	Fever, headache, fatigue, meningitis, encephalitis	3
STRONGYLOIDES STERCORALIS	Parasite	strongyloidiasis	Itching of the skin, diarrhea, cough	2
COXIELLA BURNETI	Bacteria	Q fever	Fatigue, fever, cough, pneumonia, meningitis, encephalitis, myocarditis	3
FRANCISELLA TULARENSIS	Bacteria	Rabbit fever	Infectious syndrome with skin lesions, pneumonia, liver disease, sepsis	3
HANTAN VIRUS	Virus	Murine fever	Infectious syndrome with bleeding in the skin, mucous	3

			membranes, kidneys	
LISTERIA MONOCYTOGEN ES	Bacteria	listeriosis	Infectious syndrome, muscle cramps, gastrointestinal disorders, meningitis	2
BACILLUS ANTHARCIS	Bacteria	anthrax	Cutaneous, pulmonary and meningeal anthrax, severe infectious syndrome	3
BORELIA BURGDORFERI	Bacteria	Lime disease	Erythema migrans, neurological manifestations, carditis, arthritis	2
CHAMYDOPHILA PSITTACI	Bacteria	psittacosis	Symptoms of flu, cough, pneumonia	3
CLOSTRIDIUM TETANI	Bacteria	tetanus	Dysphagia, trismus, tonic spasms, muscle hipertonus, sweating, tachycardia, shock	2

After the information on the large scale flood in Obrenovac, and the introduction of emergency situation, a notice followed to the staff of the Institute. The information were exchanged through the internal information-communication system, the notification panel, through direct communication and telephone contact. An expert session was convened - the meeting was attended by the CEO of the Institute, Assistant Directors, Head of the Department for DDD Affairs and Head of operation of the DDD Department. Information were presented about the conditions in the flooded area and the tasks and responsibilities of the Institute. Based on this, the CEO and the Head of the Department for DDD Affairs put together an operative plan for the implementation of measures of disinfection in the flooded area, in accordance with the pre existing emergency response plan in the event of floods. Department meetings were held in which work assignments were distributed, with obligations, authorizations and responsibilities, as well as the guidelines for conduct in the flooded areas, with special emphasis on employee safety. At the time the state of emergency was declared, the Institute had at its disposal 50 employees in 15 teams, working in shifts 24 hours a day, 20 vehicles, 5 motor pumps, 3 microjets and 60 hand pumps, 400kg and 1500l of disinfectant, 600l of hand disinfectant, 10l of disinsection and 400kg of deratization agent. A disinfectant with the greatest range of effects was prescribed. The disinfectant used was a chlorine formula which has the widest range of effects. An instruction for application was prepared and given to each team in the field. The application of the disinfectant was performed by a motor pump carried on the back. Personal protective equipment was determined, which every team requisitioned for themselves. Protective equipment consisted of work clothes, disposable overalls with a hood, disposable boots, rubber or plastic gloves, face masks and goggles. [1][2]

Teams of two operative technicians were formed, who received protective equipment for field work, disinfectant, equipment for application of the preparation and a company vehicle. Given that a flooded area was in question, the Institute provided food, bottled water and disinfectant to its employees because of poor sanitary and hygienic conditions and the risk of an epidemic. Before going into the field, the teams receive guidance and instructions for conducting the disinfection process in the flooded area. The teams approach the disinfection process only after the waters have receded from the objects, the sludge has been removed, the premises cleaned of all objects which happened to be inside at the time of the flood. After that, the floors and walls are washed using detergent and water. At the invitation of professional teams, a facility thus prepared shall be disinfected. In coordination with the Emergency Headquarters in Obrenovac, representatives of local communities and citizens themselves who contacted the hotline,

which was available to all the citizens through the media, the Institute had a daily plan with the schedule of buildings and facilities of public importance that were to be disinfected, taking into account the priorities for the functioning of the local community. Notifications were distributed to the citizens on how to prepare the facility for disinfection, as well as the phone number on which to report their building or apartment for disinfection. An MD also gave instructions regarding preparation of facilities for disinfection. The expertise and efficiency during work was provided by the presence of epidemiology specialist and the Institute's coordinating MD: work control, deciding on the type of disinfectant, control of rational use of disinfectants, control of the use of protective equipment, reporting on daily activities, preparing reports for the Headquarters. The procedure for communicating in the field was adopted, used for exchanging information and coordinating the teams. The procedure was adopted to regulate the handling of used protective equipment upon arrival at the Institute. After returning from the field, an operative technician washes the boots under running water and deposits disposable protective clothing and gloves in a bag that gets sterilized, after which it is deposited in the waste container. [3]

In consultation with the Emergency Headquarters, the Institute coordinated the implementation of the measures of disinfection with a high degree of professional autonomy. In order to evaluate the endangered area from an epidemiological perspective, professional monitoring was being carried out in teams which consisted of representatives from Emergency Headquarters, an epidemiology specialist at the forefront of DDD sector, representatives from City's Public Health Institute and Serbian Public Health Institute, with the obligation of giving regular reports to Headquarters. Daily reconnaissance and assessment of the situation is being carried out, and measures are suggested to all departments and institutions involved in the sanitation of the area for further continuation of the work. In the Institute, operational plan of work execution was revised daily, the dynamics of the work checked, material amended, the carried out and the remaining workload evaluated. Public health institutes from other areas sent their DDD teams to help in clearing up the flooded terrain, working in coordination and according to the Institute's plan. The level of required competence was at specialist level at least with the obligatory presence of an epidemiologist in the team for independent decision-making in the field.

There was daily cooperation with the representative of the Ministry of Health, Serbian Public Health Institute, City Public Health Institute, Veterinary Directorate, The Army and The Police, and reports were submitted regularly to Emergency Headquarters for Obrenovac, Emergency Headquarters for the city of Belgrade, The Ministry of Health and the City Administration (Departments of Health and Environment Protection).

3. RESULTS AND DISCUSSION

During the floods on the territory of the city of Belgrade in May, 2015, the Institute for Biocides and Medical Ecology was involved in relieving the consequences of floods in six municipalities, with the largest areas treated in Obrenovac and Lazarevac. In Obrenovac, 6000 apartments were disinfected, 1800 houses and all of the flooded rural households out of the 17,000 on the territory of the municipality. Disinfection was also carried out in newly formed collective centres for receiving evacuees from flooded territories, including the premises where Emergency Headquarters was located, as well as

setting up disinfection barriers and distributing disinfectants to citizens and institutions engaged in the clearing up of the terrain. An area of 10.000.000m² was disinfected in total. As a member of the unified national team for mosquito control and detection of West-Nile virus on the territory of Serbia, the Institute for Biocides and Medical Ecology distributed 200 000kg of larvicide, donated by the European Union, amongst the 72 municipalities affected by floods, with the goal to reduce the number of mosquitos and lower the possibility for the appearance of West-Nile fever, due to the existence of favorable conditions for their overgrowth. An increase in the prevalence of West-Nile fever was not detected in 2014.

Considering that the main task of DDD measures in a state of emergency is protecting the population, as well as the employees from infectious diseases, the measure of success of applied DDD measures is reflected in the fact that the population of the flooded area was not affected by infectious diseases in an epidemic extent, but as sporadic cases during the period of application of disinfection measures and up to two months later.

Since the employees were also exposed to biological hazards during their work on relieving the consequences of the flood, assessments were made of the risk of injury and damage to the health of employees, with the aim of determining the nature, extent and duration of exposure of employees, and the ways and measures of eliminating or reducing these risks. The people exposed to the influence of biological hazards in the flooded area were the employees working on disinfecting: first group DDD technician, warehouse clerk, head of device and grounds maintenance, operating and technical manager of the department for sterilization of medical supplies and equipment, as well as operating technician, assistant director of DDD, head of department for DDD, microbiologist, epidemiologist, laboratory technician. The people exposed to the influence of biological hazards in the immediate vicinity of wastewaters were the employees conducting field research: head of department for program activities, coordinator of program activities, health associate -researcher, microbiologist, lab technician and first group DDD technician. Measures of prevention can be general and specific in relation to the agent. Regarding specific measures of prevention, the Institute has a policy of obligatory immunization (vaccination) of employees against infectious diseases for all who perform tasks in environments with epidemiological risk. General measures of prevention, i.e. occupational safety measures and measures for avoiding contact between people and biological agents, were enforced to the extent to which their implementation was possible in the field. (Table 4.) [4][5]

Table 4. Preventive measures for employees

Preventive measure	The possibility of implementation
Reducing the number of employees who are exposed to biological risks	Given the importance and the workload, it was not possible to reduce the number of employees in the field
Minimum of employees exposed to risk	Maximum number of employees was required
Reducing exposure time	Reduced time of exposure
Coordination of the work processes and conditions	Achieved
Collective protection measures	Implemented
Individual protection measures	Implemented
The use of pictograms for alerts about biological hazards	Notifications and alerts using pictograms
Investigation of the presence of biological hazards	The possibility of taking samples for examination of types of biological agents provided
Ensuring the safe collection, storage and disposal of waste after finishing treatments	Containers for disposal after finishing treatments of disinfection and sterilization of waste provided

Safe handling and transport of biological hazards within the workplace	Chamber for safe and secure handling of the preparations with the presence of a potential biological agent provided
Vaccination, protection with medication and preventive examinations after periods of exposure	Vaccination and preventive examinations provided

The result of the implemented measures was the absence of persons affected by infectious diseases caused by biological hazards among the employees of the Institute.

After the floods in 2014, a control of biological hazards is carried out for the purpose of preserving the health of employees as recommended by the competent agencies and institutions. Systematic medical check-ups by an occupational medicine specialist, both regular and based on indications, are provided for the employees with a wider range of diagnostic procedures with the aim of examining exposure to biological hazards. Mandatory reports relating to possible changes in the health status of employees were introduced (headache, nausea, vomiting, fever, diarrhea, rash, biochemical indicators ...) after completing work with biocides or in the flooded areas, i.e. after exposure to biological agents.

Amendments were made to the Act on risk assessment using the Ordinance on preventive measures for maintaining safe and healthy working environment when exposed to biological hazards. Based on their field experience, all of the employees in the Institute are actively involved in proposing new measures of improving occupational safety and protection, and propose additions to personal protective equipment, so a great number of documents were passed in the period after the floods. (Table 5.)

Table 5. Documents passed after the engagement in relieving the consequences of floods

Number	Document
1.	The amendment to the Act on risk assessment – AMENDMENT, 01- 29/09/2014
2.	The plan for implementation of the process from the amendments to the Act on risk assessment in the workplace in the Institute, 10/10/2014
3.	The procedure for the organization of personal protective measures and implementation of decontamination (disinfection) of the premises where persons suspected or suffering from Ebola or suffering from Ebola have been staying (facilities and ambulances)
4.	The procedure for the use of protective equipment and the basics of disinfection according to epidemiological indications (infectious agent - the Ebola virus), 22/10/2014
5.	The procedure for disinfection in the event of natural disasters, large-scale floods 22/10/2014
6.	The procedure for notifying the employees in a state of emergency – floods, 22/10/2014
7.	The plan for conduct in a state of emergency - large-scale floods, IBME.IP12-01, 22/10/2014
8.	The notification procedure in the event of flooding in Obrenovac, 22/10/2014
9.	The instructions for the use of personal protective equipment in the event of Ebola, 22/10/2014
10.	The instructions for disinfection of the flooded area – Obrenovac, 22/10/2014
11.	OHSAS goals and programmes for 2014, IBME.IU07-01/01, 24/10/2014
12.	A state of emergency: in the event of flooding caused by natural disasters, IBME.IP12-01, 24/10/2014
13.	A state of emergency: in the event of a gas leak in a chemical laboratory, IBME.IP12-01, 24/10/2014
14.	The plan for monitoring and measurement of significant effects on the environment, 12/11/2014
15.	The instructions for conduct of operative technicians when working in the field for the purpose of preventing and suppressing nosocomial infections, 19/11/2014
16.	The plan and program for prevention of domestic infection in the Institute 2014, 20/11/2014
17.	The program for improvement of quality in the Institute 2014, 20/11/2014
18.	The strategy for risk management, amendment 2014, 28/11/2014

19.	The register of risks - amendment, 28/11/2014
20.	The plan for the procurement of protective equipment for 2014 - annexes from the Procurement Plan for the Institute, 28/11/2014
21.	The plan and programme of measures for improvement of occupational safety and health, 03/12/2014
22.	The analysis and the measures taken based on the of risk that occurred in 2014., 14/12/2014

Supplies of disinfective materials, protective clothing, gloves and boots were provided from donations from the World Health Organization in the event of a similar situation reoccurring. funds for the treatment of mosquitoes were provided from donations from the European Union. The resources required to implement DDD measures in case of reoccurrence of a natural disaster were provided, and the Institute was granted the exclusive right for performing DDD operations for the City of Belgrade by city authorities. The realization of the following is in progress: staff amendment based on the approval from the Ministry of Health for filling in the staff in accordance with the approved personnel plan, improvement of protective working equipment in accordance with the new programmes and projects and renewal of the motor pool. The Institute is also currently: preparing the first revision of the operative and strategic plan of the Institute, synchronizing the tasks, duties, potentially increasing demand for DDD measures in emergencies and creating plans for managing biological risks in a state of emergency, introducing proposals for management strategy for vectors of infectious diseases in accordance with climate change to the Ministry of Health, recommending measures to be implemented in the event of new disasters and accentuating the importance of permanent vector control with an emphasis on control in emergencies.

4. CONCLUSION

The frequency of natural disasters and catastrophies in the world requires that health services are constantly ready for working in a state of emergency. In order to raise the level of readiness to react in a state of emergency, it is necessary to create risk assessments and plans for protection and rescue after a detailed analysis and prognosis, coordinate the role, significance, indications, scope, method of administration, personnel, resources and organization of DDD sectors, plan for staff, supplies and financial resources for the implementation of intervention measures in a state of emergency. DDD measures are effective, simple and can be applied on a large scale if there are reasonable indications, so they represent the first line of defense of health against the harmful effects of biological agents. In the case of natural disasters, an epidemic can be sudden, surprising, and can result in extensive and grave consequences. The scope of DDD measures depends on the phase of the natural disaster, the category of the biological hazard and the risk of an epidemic. In epidemics, DDD measures are implemented immediately and have an emphasized importance. The duty of employees is to prevent the influence of biological hazards on the health of the population in the conditions of technical exposure to the agents that impair the health potential of the individual and the system. The duty of the employer is to assess the risk of injury and damage to the health of employees, with the aim of determining the nature, extent and duration of exposure of employees, and the ways and measures of eliminating or reducing these risks. Obrenovac has shown the great importance of the Institute in carrying out counter-epidemic measures in areas with high epidemiological risk where there are poor sanitary

and hygienic conditions, for the purpose of protecting the health of the population from infectious diseases. Healthcare institutions which have a DDD department in its structure must have the necessary support for development from both the founder and the Ministry of Health, seeing as they complement the defense force in a state of emergency.

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THE ADVANTAGES OF INTRODUCING PROFESSIONAL WORK BOOKLET

Has Dejan

Company “Izoprogres”

Summary:

To participate in tenders, it requires technical documentation regarding the services to be performed. From the field of construction works for Safety and Health at Work it should also be submitted for each worker about ten sheets of paper. For 30-35 workers it is a total of 350 sheets, all in triplicate, which means about thousand sheets. Then, all over again when you get the job, along with the application, or the study of construction site, meaning a thousand sheets more. This paper presents a proposal-introduction of the Professional work booklet. By its application control itself will be faster, simpler and will give us accurate and irrefutable data, especially for companies that perform work such as construction and frequently changing locations.

Keywords: OHS, Professional work booklet

1. INTRODUCTION

“Think about protecting the environment before printing this letter”

“The nature can not exist without trees but we can without printing this letter”

This is the message that we all receive with almost every mail that we get. That is something that inspired me to think how we can, in our line of business and that is Safety and Health at Work, save time, reduce administration and not spend tones of paper needlessly but still get the quality result on the other hand.

Is it possible? Of course it is.

2. ABOUT THE COMPANY “IZOPROGRES”

The company was found in 1967 and has been working successfully ever since, for more than 50 years. It is a shareholding (A.D.) construction company that deals with acoustic and thermal insulation, finishing works in the construction industry as well as industrial cleaning. The company owns 20 industrial vacuum cleaners and 2 of them are mobile on the trucks. The company features over 100.000m² of metal, pipeline and wooden scaffolds, which have ground support or which are attached to the individual parts of the facilities. Using our own resources we make and design scaffolds for insulation works and other construction works, specially using CNC cutting machine (Computerized numerical control machine) during the last 2 years. We do both interior works inside facilities, as well as in the open, at the temperatures from -10 up to +50 c.

The company owns a wide range of products as well as the equipment along with the transportation vehicles from trucks, vans, tractors and everything necessary for designing, performing and transporting .

In the last decade the company has adopted numerous international and national certificates, permits and licenses such as ISO 9001, ISO 14000, OHSAS 18001 and many more, all registered and approved by LLOYD’S.

All the work that we do is defined as highly risky, so we take a great care that our employees have all the necessary education and licenses with top-level certificates, with a special attention being devoted to worker's safety and health. We can proudly say that it has been a 1000 days that we did not have injury at the work place.

Following the trends in our country, and the world at large, we have managed to introduce numerous innovations and improvements so far, and as a person in charge for Safety and Health at Work in this company, with my experience I came across to another improvement.

3. PROPOSAL FOR INTRODUCING PROFESSIONAL WORK BOOKLET

This proposal came from the idea to save time and money, to get rid of the unnecessary administration and to save hectares of our forests without using a huge amounts of paper.

What it is all about?

To participate in tenders, it requires technical documentation regarding the services that we are performing. From the field of construction works regarding Safety and Health at Work we should submit for each worker about ten sheets of paper. For 30-35 workers it is a total of 350 sheets, all in triplicate, which means in the end about a thousand sheets. Then we need to do the same thing all over again when we get the job, along with the application, and the study of construction site all in five copies which means another one thousand and five hundred sheets more. This is a very basic picture of destroying hectares of our forests without the need.

I would just like to remind you that when submitting The Study of Construction Site, we have an obligation towards Ministry of Labor, Employment and Social Affairs and the inspector of Labor in terms of documentation that consists of : medical certificate, MA form proving that the worker is reported, worker's insurance, Form 6 proving that the worker is trained for high-risk jobs...all the way to the certificates for every Standard necessary. All in all it comes to about 10-12 papers per worker.

What is the proposal?

Introducing The PROFESSIONAL WORK BOOKLET wich decreases usage of paper by 10 times , which is almost a thousand percent, and not to mention the time spent to form and collect excessive and necessary documentation.

It is very important to highlight that with the PROFESSIONAL WORK BOOKLET, a lot of the frauds can be avoided.

Experience from practice

Unfortunately in our experience we came across a lot of unreported and uninsured workers on our construction sites. That is one of the consequences during the transition that Serbia is in. Employers are doing everything in attempt to invest as little as they can on one hand and earn as much as they possible can on the other.

Inspectors are doing their best to prevent that, but it became mass phenomenon.

There is a reason why I am mentioning this.

We, as a serious company who takes great care about our workers to be equipped by all the regulations, to be reported and insured, suffer unfair competition from smaller companies who are growing like mushrooms and surviving like dragonflies.

It became a regular occurrence for those small companies first to report their workers, than gain the Tender by offering unrealistically low prices, get their workers into the industrial building and get them IDs and then check out their workers. That is how those companies can offer their services at a very low price and form a big difference in the offers. Not to mention that by doing so they are turning their workers into slaves in the 21st century.

2020.	PROFESIONALNA RADNA KNJIZICA	2020.	PROFESIONALNA RADNA KNJIZICA
Obrazac MA		Školska sprema	
Datum			
Ugovor o radu		Diploma 1	
Datum			
Obuka kod investitora		Diploma 2	
Datum			
Lekarsko userenje Obrazac 3		Diploma 3	
Datum			
Zadužena LZS		ZOP - Obuka	
Datum			
Osiguranje		Zaštita čovekove okoline - Obuka	
Datum			
Obrazac 6			
Datum			
Obrazac 6			
Datum			

Pictute No. 1 PRK – HSE Passeport

What PROFESSIONAL WORK BOOKLET offers?

If this proposal is accepted, for workers to own a PWB, it will save time and money and the control itself will be faster, simpler and will provide us with accurate and irrefutable data. Benefits from keeping the administration this way are numerous:

By stepping on the work place, Workers would use their PWB-HSE passport as identification for entering the work place, and the OHS service there would read the data in the electronic form, or if necessary in the paper form

When the job is finished, worker would carry his PWB to another construction site and hand it over to the next OHS there so they can enter all the necessary data for that specific construction site.

All the data in the PWB can be checked at any time

Today, all the control and checking demands very excessive documentation , large amounts of paper that are not easy to verify, with the great use of time. HSE Passport allows control and checking in a short period of time.

We have to understand that Serbia is in the 21st century and that there is no need for us to wait for European Union to introduce something like this as an obligation, let us do this for our profession and let us make this kind of administration a Must.

This would not be the end, of course. This is just a transitional stage.

As of tomorrow this kind of Booklet - Passport should be in electric form, something like our personal IDs with a chip. Chip would contain all the data just like the classic professional work booklet. The investor, that is the firm where the job is done, could add to the existing chip all the necessary information regarding entering and exiting the work place within a timeframe of the specific job. This is how PWB can directly save time, money and great amounts of paper.

This is the way for investors to save money and their time for issuing ID cards, and also the way to save time for gathering all the necessary documentation . With the use of PWB the investor would not have to print and issue his own ID cards.

There was an example, during overhaul in 2014. that there was no more ID cards for workers, because the company that was producing them just disappeared. It led us to use lists instead of ID cards, and that provided a great opportunity for some firms to bring untrained and unreported workers to the construction site.

4. CONCLUSION

We should not wait for EU to bring similar regulations, we should start now with this project and compete for funds and resources that will allow us to introduce Electronic Professional Work Booklet.

Do not wait for tomorrow, we can start with changes right now.

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ENGAGEMENT OF MILITARY FORCES IN ANTI-TERRORIST OPERATION

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Abstract: The phenomenon of modern international terrorism is opening a new era of asymmetrical and nonlinear conflict in which the most modern military systems show a lack of efficiency in fighting against terrorist organizations. Considering that such operations need to be planed, organized and carried out in urban areas, indicates the specificity and complexity of the deployment of forces in the fight against terrorism in larger or smaller settlements. Performing counterterrorism operations in an urban environment requires the need for presence of the social dimension of the operating environment and respecting the principles of An International Humanitarian Law. Fire support for the forces of the defense system in the fight against terrorists in populated areas is limited through excessive use of force, and for success in the anti-terrorist operation it is important to use force timely and appropriately.

Key words: terrorism, fire support, security forces, antiterrorist operations.

1. INTRODUCTION

The terrorist organization with strong fanaticism and support of the local population can pose a serious threat even to a lower military means in an urban environment. In order to successfully confront the scourge of the modern era, it is necessary to thoroughly study the same in all its spheres: in the objective, the mode of action, analyzes the behavior of terrorists, predicting the measures and procedures for combating terrorism and terrorist acts.

Modern states in countering these threats engage all elements of national power. Based on previous experience of such an approach to the use of force, it was noticed that the military capacity, although the essential and most important, is not sufficient to respond to the many challenges that arise in the process of managing crises caused by the action of the terrorist forces.

Considering that the terrorist forces regardless of ideology, origin, location in which they operate or organizational structure have the following common characteristics:

- the need to survive, and stable financing,
- primarily strive to gain as many followers through propaganda activities and recruiting and
- violent act against carefully selected targets.

With the development of the society, developed terrorism, this means that initially it wasn't what it is today. It began as a struggle of the weaker against the odds, and in the recent past became a monster that is ubiquitous, or may be, at any point of our planet. Today terrorists are no longer a handful of religious, drugged and hopeless people, but it is highly sophisticated, technologically educated, usually religiously minded, mostly well-paid and highly ruthless organization, sowing panic and innocent victims around, realizing its goals.

No terrorism occurs randomly, each has its deep causes and the immediate reasons for the occurrence. The very mention of terrorism in people causes fear and panic, and that, the main promoters of terrorism usually use to complete their political or religious goals through their influence on the masses and manipulation.

Serbia has the misfortune to be located on the transit Middle East - West, and adding residual Mujahedin units in the area and a more open fight of the Albanian nationalists, our country has an obligation to gather experts from all areas that could contribute to a successful fight against terrorists. In this case, it is best to use experts in this field as a preventive because when terrorist organization strengthens, the fight then becomes time-consuming and difficult.

Potential targets of terrorist attacks in Serbia are most likely to be the water supply facilities and power plants, transport and communications infrastructures, as well as objects of international institutions and diplomatic and consular missions of importance for Serbia and the international community, as well as places of mass gatherings, such as schools, hospitals, public transport etc. From the foregoing it can be seen that the terrorist acts are being carried out principally in urban areas.

The attractiveness of the importance of urban areas in the XXI century is considerably enhanced almost all of the main social activities are concentrated in them, therefore it is not exclusive for them to be the subject of terrorist actions.

Urban environments represent a demanding and complex environment for the army ("If military units are not fighting for the cities, they will fight in the cities").

In the urban environment the right of choice of all available forces and means and military resources and military potential to perform antiterrorist operations is being restricted, and at the same time the legitimacy of all the selected targets for action should be provided.

The social dimension of the operational environment in a given zone of anti-terrorist operations in urban areas does not justify excessive use of force, but also experiences tell us that during the fire support for forces of the defense system destruction of civilian property and civilian casualties is expected. Civilian casualties in urban areas must be kept to a minimum and must ensure humane treatment of the wounded and injured, in accordance with the principles of international humanitarian law.

Successful coordination and cooperation must be precisely organized and continuously maintained with all the forces of the defense system involved in anti-terrorist operations and in actions against terrorism in order to prevent the loss of their own fire.

2. THE ANTI-TERRORIST OPERATIONS

Doctrine of Serbian Army operations defines the term of anti-terrorist operations as a combat operation being performed at peace during the emergency and the state of war in order to provide support and assistance to civilian authorities in preventing and neutralizing terrorist activity. In the case of attacks on military facilities and the escalation of terrorist actions, forces of the Army are used to break up and destroy the terrorist forces.

All kinds of operations by the Serbian Army, including counterterrorism, are complex projects and responds to any possible crisis that requires comprehensive planning, organizing and leading the forces. Therefore such operations are very complex because they were based on spending huge resources to achieve the defined objectives.

In order to eliminate terrorist activities and the destruction of terrorist forces, in accordance with the national security strategy and doctrinal positions, anti-terrorist operation is being planned, organized and carried out by the main carriers of anti-terrorist operations with the elements of the defense system and other elements of the security sector of the Republic of Serbia, as well as with the forces of partner and friendly countries.

The main carriers of anti-terrorist operations, special units of MUP, anti-terrorist units and the units of the military police, and other units, primarily the Army, can engage in extra tasks. The forces of the Serbian Army support special units of the Interior Ministry in detecting, blocking, neutralizing terrorists and principally engaging outside populated areas, in accordance with their capabilities.

An important role in preparation, organization and implementation of anti-terrorist operations takes the fire support for the forces of the defense system. Essential parts are the forces of fire support in anti-terrorist operation can be deployed in urban areas in accordance with their capabilities.

During the execution of counterterrorism operations it is expected that there are civilian casualties and destruction of civilian property. Due to the excessive use of force in the destruction of terrorist organizations, integrated power system security and the defense forces of the Republic of Serbia, can probably experience the condemnation of world public.

Experience and knowledge from practice indicate the problems in the use of military force in all forms of the particular organization and regardless of the conditions in which these threats arise. These problems are mainly related to the specific use of military force against terrorism carriers, primarily in the division of tasks and responsibilities of the various forces of national security and defense in countering these threats, military cooperation with those forces and competencies in the command and control of defense forces in the fight against terrorists.

The success of the anti-terrorist operation depends on the determination for solving the situation. Engaged security forces and the defense system of the Republic of Serbia must have a clear and unique understanding of the vision and intentions of the commander and the concept of anti-terrorist operations.

The main problem that can be seen is, that today there are no clearly established management systems, command and control system integrated forces and security forces of the defense system of the Republic of Serbia in counterterrorism operations. The current concept of deployment that defines the military forces, engages outside settlements, to support the MUP forces. Also Special Forces (anti-terrorist units and units of the Military Police) in accordance with their capabilities in case of engagement in military infrastructure facilities are the carriers of anti-terrorist operations, and MUP forces provide assistance in resolving the emergency situations (eg. A hostage crisis and etc.) .

The concept of the use of special units of the MUP defines that police forces are engaged in detection, prosecution and arrest of terrorist forces in cooperation with the Ministry of Justice and the courts of competent jurisdiction in the territory of the Republic of Serbia. In addition to these forces other state institutions of the Government of the Republic of Serbia are engaged, through the National Security Council, BIA, VOA, through the VBA and other entities that actively participate in the assessment of risk and the possibility of establishment and activity of the terrorist threats in the country.



Figure 1: Conceptual scheme of organization of the forces of the defense system in the anti-terrorist operation

3. MILITARY FORCES IN OPERATIONS

The Republic of Serbia can be the target of terrorist activity, both directly and by using its territory to prepare and carry out terrorist actions in other countries. A fresh example of such terrorist acts is an attack on a police station in the Republic of Serbian in Zvornik and the terrorist attack on border police in the border town as well as in the city of Kumanovo in the former Yugoslav Republic of Macedonia.

It is evident that the terrorist organizations changed from its inception to the present, and that at the present time they weigh towards becoming a rebel organization so they can justify their existence, and therefore to gather as many supporters and sympathizers.

Unlike the insidious tactic "hit and run" used by terrorist organizations around the world and that the "KLA" in nineties conducted in Kosovo and Metohija, we have witnessed the emergence of new forms of activity after 2011 and the rapid spread of "Islamic state." A highly sophisticated, educated, religiously minded Islamic country (ISIS) tends to convert the terrorist organization into a rebel one. Her secret cells become a military unit, a mode of action turns into tactics "conquer and hold territory." It makes planning and execution of counterterrorism operations more complex.

Such conflict will assume the character of a series of complex multidimensional operations which forces of the defense system tend to impose their own way of combat operations, especially in urban and multi-ethnic environment. Military forces and the forces of the defense system in the anti-terrorist operation must be aware that they are conditioned by many limitations.

Looking at the strategic level, the focus of a possible escalation of the conflict would be primarily directed at the establishment of an impact on public opinion in the area of interest, especially for the urban population and preventing the links between terrorists. Features of operational plans should be directed to the implementation of the effect on the population and other factors of civil environments, as well as to protect them.

Basic principles on the use of military forces to be followed during the execution of anti-terrorist operations in urban areas are:

- prevent excessive use of force,
- protect historic, sacred and religious monuments and symbols,
- protect objects of special importance, as infrastructure; especially in multiethnic areas and
- protect the civilian population and act in line with international humanitarian law.

This is a compound in which has only one right answer, and that is, to consider what are the strengths and resources that can be engaged with the other forces of the defense system in the anti-terrorist operation.

At the operational and tactical level, the focus lies on the asymmetric approach to planning and execution of tactical operations and realization of tasks involving the application of anti-terrorism measures and specific combat and non-combat activities in urban areas.

Military forces in the course of preparing and conducting counterterrorism operations in accordance with the constructed operational capabilities will be implemented following a complex combat and non-combat activities:

- scouting
- searching the area,
- controlling the territory,
- ambushes,
- environment,
- Blockage
- attack,
- movement,
- fire support and
- Logistical support.

Military forces in counterterrorism operations would be developed in accordance with the operational capabilities of its reconnaissance unit engaged in the preparation phase, principally in the survey, that is, in the collection of data on the strength, faith and combat deployment of terrorist groups. The process would include services VOA and VBA in the risk assessment, defining the locations of terrorist groups and the potential possibilities of its action.

Military police units with police forces would participate in search of the field, finding and destroying terrorist forces detected and possibly residual foci of resistance. The forces in the specific operating environment, the ambush tactics and through short, vigorous and sudden shocks, with the purpose of inflicting losses to the terrorist groups during switching bases from one to the other regions, as well as the blockade of the terrain will restrict or impede the maneuver terrorist forces in a particular direction or at the same time make the isolation regions. In most cases, in unfavorable meteorological conditions and in conditions of limited visibility with all available and reliable information shall be

made accurate assessment and then setting the terrorist forces that will lead to the same disadvantage in the limited space and the Creation of conditions for their destruction.

Through a combination of movements and strikes of fire causing losses to the terrorist groups, through raids and outbursts, as well as through various demonstrative effects of exercise constantly deceiving the enemy and concealing its own intention.

During the execution of counterterrorism operations, in order to create conditions for favorable security situation in the zone of operations, some of the forces would be engaged for the control and protection of the territory.

An essential part of military forces in anti-terrorist operations are fire and logistical support. The support forces of the defense system in the anti-terrorist operation, the forces of fire support mainly act against the major points of observed terrorists' resistance, prevent maneuvers and regrouping, the eventual arrival of reinforcements and prevent the terrorists from withdrawing from the region. For Fire support, in anti-terrorist operations, the most suitable are mortars, which should be borne in mind when proposing its use.

Assigned tasks military forces engaged in anti-terrorist operations are primarily in line with the objectives of their use and are aimed at achieving unity of all efforts with other forces in the defense system.

In achieving the ultimate goal and neutralizing extremist forces, terrorist forces isolated from the population and the degradation of their capacity for action, creating a security environment unfavorable for the activities of extremist and terrorist forces inside and outside the Republic of Serbia all the subjects of security and strength of the defense system shall be included.

4. EXPERIENCES AND LESSONS LEARNED FROM KIM AND SOUTH SERBIA

The roots of terrorism and terrorist actions in Kosovo and Metohija last for nearly a century, a historical retrospective of the crime and the events show us that the continuity of Albanian terrorism against the Serbian national being is essentially influenced by many non-Balkan factors. Albania's political, economic and religious elite, in the past century has always been guided by the assessment that only with the help and support of the foreign patron can hold on power. What characterizes the Albanian extremism and terrorism is based on the " jihad " religious initiative aimed at achieving true specific goal - breaking the territorial integrity of the Republic of Serbia, or attempt secession of Kosovo and Metohija from the home country. However, one should not forget the recent past and the territory of Kosovo and Metohija and southern Serbia, and that the joint activities of the forces of the defense system and transferred experience contributed to the preservation of peace in the region. Such conflict of regular military, police, intelligence and other forces of the state, on the one hand and terrorist forces on the other, was characterized by an asymmetrical approach to the selection and mode of operation.

After the Second World War one of the biggest anti-terrorist operations in Europe and one of the biggest anti-terrorist operation of the Pristina Corps of the 3rd Army and police forces of the Republic of Serbia was planned, organized and carried out on the territory of Kosovo and Metohija in the period March - October 1998.

Analyzing contents with the critical review, I focused on what has preceded it, primarily with the aim to draw lessons from it, and that through lessons learned we,, transmit experience from generation to generation ".

Since 1991. till 1997. the MUP members were often the target of attacks by Albanian terrorists (of 134 acts of violence on the territory of Kosovo and Metohija, 90 were carried out on members of the MUP). Also in the above mentioned period 243 acts of violence were made in the grip of the Yugoslav-Albanian border. Looking at the average annual notice in 1997, the number of terrorist acts rose sharply compared to the previous year. These years are characterized by simultaneous attacks on police forces and retreat to the village after the attack, and thus guide us to the subject of this work and operations in an urban environment.

With the formation of the Kosovo Liberation Army to achieve the goal of independence of Kosovo and Metohija, in early 1998, Albanian extremists from Kosovo triggered a broader campaign of terrorist actions on members of Serbian nationality, the police and the army. Many KLA members were trained in various military camps in other countries, and in their ranks of the KLA there were over 1,000 mercenaries from other countries. Among the mercenaries were British and German instructors. KLA consisted of maneuvering task force and locally organized forces of members and supporters. Its organizational structure consisted of military and civilian part. The military part was organized in groups of three, five or nine people who were only involved in a terrorist actions against members of the MUP, civilian Serbs, Montenegrins and „disobedient" Albanians and other ethnic groups. The civilian part, KLA was much more numerous and consisted of the persons who carried out the tasks of observers, scouts, messengers, helpers, donors, whistleblowers, mobilizers, the propagandists etc. This year was characterized by attacks on civilian and military police. The attacks on Serbian villages, the murder of Serbian and Albanian population, control of a small number of roads and villages in Kosovo, attacks on isolated police stations and checkpoints on roads, Serbian villages, the assassination of Serbian and Albanian population.

The riots in Kosovo and Metohija, which have almost never stopped since 1981, and reinforced in the 90-ies of the last century, in 1997, and especially 1998, programmed, have cleverly grown and escalated into the exposed terrorism of the Albanian national minority against their own country. Guided and supported by the West they created, at that time a much-needed, atmosphere that with the realization of the set goal - breaking up Yugoslavia and occupation of territory – will go full force.

Fundamental problems that the Army has faced together with other forces of the defense system:

1. The structure of units and assets at the time was dimensioned for a different kind of conflict;
2. The possibility of identifying the enemy;
3. Lack of uniformity in training and supply of units on the entire territory of Kosovo and Metohija;
4. The lack of a common understanding of the situation between the forces of the MUP, the VJ, and civilian authorities,
5. Lack of coordination between military and police forces in the zone of antiterrorist operation and
6. A conceptual framework for the use of force included the lack of initiative and respond to KLA actions.

A new way of preparing and conducting counterterrorism operations, in 1998, in Kosovo is primarily required an adaptation in the use of VJ:

1. Offset forces outside the barracks;
2. training forces for specific tasks and
3. Organizing the forces in temporary bands with different levels of organization as follows:

1. forces for the attack,
2. forces to protect the territory and infrastructure,
3. Assistance Force,
4. Border Protection
5. MIA support.

A new approach of command was conditioned because of the different number and types of units of the army and the forces of the defense system. Commanders within their jurisdiction were given a certain level of freedom of action and self-initiative.

Tactics units of the Yugoslav Army during the execution of combat operations with other forces of the defense system in the anti-terrorist operation were based on:

1. – The attack - environment and infiltration;
- The defense - in cooperation with MUP forces disabling control of roads by the KLA, settlements and incursions into important buildings.

Lessons learned from the actions in Kosovo and Metohija in 1998:

Strategic level:

1. The absence of uniform action by all stakeholders in the country;
- The delay in response to the emergence of criminal and terrorist groups and
- The delay in the response to the smuggling of weapons and equipment across the state border.

Operational level:

2. A good assessment of the situation in Kosovo and Metohija;
3. Inadequate preparation units (training and weapons and equipment) and
4. A small number of trained and professional units.

Tactical level:

- Fast adaptation to changing circumstances;
- Freedom of action in the process of decision making and initiating action and
- Good coordination between the different units.

Through lessons learned we are to be primarily reminded, that many read for the first time what you should never have left to the oblivion, to remind ourselves what we're capable of, to learn certain lessons, and that in the following period we do not make the same or similar mistakes.

Due to the terrorist acts on the territory of Kosovo and Metohija committed by Albanian terrorists and for failure to act by the Mission of the UN, after the NATO aggression, the consequences are disastrous. More than 3,000 people were killed and abducted, about 50,000 housing units destroyed and around 350,000 inhabitants expelled.

After the NATO aggression in 2000, the crisis in the south of Serbia, that was in direct relation to the events in Kosovo and FYROM, as well as today's events in the region, soon occurred. OVPMB - a terrorist organization with strong ties to the KLA (personnel, weapons and equipment, tactics) hired from 1999 to 2001 with the main aim of secession of part of the territory of Yugoslavia and the annexation of Kosovo.

Analyzing the chronology of the conflict after the first armed conflict that occurred in mid-2000, with the terrorists in the south of Serbia, the Serbian Government established the Coordinating Body for Presevo, Medvedja and Bujanovac in order to resolve the situation in December 2000. The same has provided international monitoring of events by the UNDP which has from December to February 2001 led mission in the region. In May 2001, the Army of Yugoslavia begins to enter the Ground Safety Zone and establish control of the territory.

The complete concept of operations in southern Serbia is fully based on the experience of fighting on the territory of Kosovo and Metohija, BiH and Croatia.

Joint national forces were organized into armed groups as follows:

- Forces for direct action (scout units, military police, special power VJ);
- Forces to protect the territory (various Military and police units). Military units were primarily responsible of protecting non populated territories, and the police in populated places.
- fire support forces and
- Logistics Forces.

Lessons learned from the territory of South Serbia in year 2000 / 2001th:

Strategic level:

- The unique action of all relevant actors in the country;
- Political measures in accordance with the international community and
- Application of psychological-propaganda measures (trust between the Albanian population and government institutions, police forces ...).

Operational level:

- A good assessment of the situation;
- Unique intelligence security;
- Good cooperation with non-governmental organizations and
- Unique system of command.

Tactical level:

- Quick adaptation to the conditions;
- Freedom of action in decision-making and effect;
- Good action between various military and police forces and
- A large number of combat groups made the coordination harder.

5 CONCLUSION

The basic vision is the construction and upgrading the capacity of all relevant factors of the defense system of the Republic of Serbia, as well as for the forces to act together, preventively and efficiently in cross situations resulting from the action of the terrorist forces.

In the coming period it is necessary to redefine and regulate current concepts of defense of the Republic of Serbia and clearly establish a unified chain of management functions, establish a management system of command and control integrated system of security forces and forces of the defense system of the Republic of Serbia in counterterrorism operations.

It is necessary to develop the ability to create new operating procedures in planning the operation, in order to create the conditions for integrated management and control of counterterrorism operations in an urban environment.

By joint training under the unified command of all forces of the defense system, to develop the unique capabilities of understanding, decision-making, planning and the use of force in all forms of terrorism, in prevention and in confronting terrorism.

To Develop models of engaging joint forces of the defense system in accordance with the spatial conditions of the operating environment, and if necessary to include the power for fire support. to develop and model forces of the fire support in anti-terrorist operations in urban areas in accordance with the development of the model of the deployment of forces of the defense system. With Further development and modernization of arms and military equipment, to develop special types of ammunition for the fire support that will be efficient and effective in urban areas and thus prevent excessive use of force and collateral damage.

Adapting the organization of power and relationships to the concrete conditions of the operating environment to enable defining the necessary skills for the execution of specific missions in combating terrorist forces.

Train and equip forces on the unique grounds in the implementation of anti-terrorist measures and procedures in the course of operations.

In According to that, to prepare, organize the integrated power and carry out the exercises in the field of anti-terrorist operations. These classes implement the first training center, via simulation, organized by the competent organizational units of the Serbian Army, with military police units and Special Forces of the Army of Serbia, in cooperation with the Military Security Agency and MUP units. Upon the establishment of the required capabilities to perform counterterrorism operations of integrated power system of defense of RS, to engage in the exercises and strength from the close environment, and in accordance with the international commitments.

The achieved level of ability, upon completion of the exercises in the Training Centre via simulation check through exercises at training grounds in terms of the approximate performance of anti-terrorist operations in urban areas.

Based on the defined skills and ways of deployment of the security and defense system of the RS, it is necessary to operationalize different levels of response and provide the growing of joint forces to respond in accordance with the size of the potential threat and the terrorist forces.

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THE SPECIFICS OF DESIGN OF THE ORGANIZATIONAL UNIT FOR EMERGENCY SITUATIONS IN BUSINESS ENTITIES

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Abstract: Emergencies predominantly have a negative effect on business and industry, which can be measured by injuries and lives of employees, but also by money. Nevertheless, the potential solutions to mentioned problems are in the appearance. Business entities can avoid injuries and neutralize or reduce damages if they organize activities of preparing for, mitigating, responding to and recovering from an emergency. One precondition for the efficient and effective realization of this process is the precise definition of the organizational unit in the business entity which will deal with matters realated to emergency situations. The structure and competence of this unit, responsibility, scope of assigned operations and tasks and coordination with other parts of a business entity depend on requirements, resources, risk assesment of business entity from natural and other disasters and similar.

Keywords: business entity, emergency situations, organizational unit, dimensions of organizational structure, coordination

1. INTRODUCTION

An emergency, as any unplanned event can cause deaths or significant injuries to employees, or can shut down business, disrupt operations, cause physical or environmental damage, or threaten the facility's financial standing or public image [1]. Obviously, numerous events can be "emergencies," including fires, floods, earthquakes, storms, landslides and similar. Most of business entities are threatened by one of the mentioned hazards which largely depend on the geographical location and the activity that it deals with. In this regard, prevention is very important in order to avoid potential victims and damage that would jeopardize the further activities of companies. One of the ways is adequate organization of process of emergency management within the business entity. Emergency management is the process of preparing for, mitigating, responding to and recovering from an emergency [1]. In contemporary business conditions one of the most frequently mentioned term is organization design. But, the process of organization design does not necessarily refer to the whole organization and can also refer to a smaller organizational unit within the organization. In this way, can be designed special organizational unit that will deal with emergency management tasks. The configuration of this unit will depend on many factors. Larger business entities and companies may have their own unit, while smaller organizations may need to rely on mutual aid agreements signed with organizations which are specialized for the area of emergency management. In this paper, after analysis of different definitions about designing of organizational units which will be used for the purpose of this paper, we deliberately focus on the business entities which should have in its composition a separate

organizational unit that will deal with this issue. The purpose of our research is to determine benefits that this way of organization activities related to emergency management can have business entities with regard to reduce the negative impact of natural and other disasters.

2. PROCESS OF DESIGNING THE ORGANIZATIONAL UNIT

Observation of the organizational structure, and also organizational unit, as a set of jobs is not completely justified. Workplace should be created by the design of the key elements of the workplace. During the design will be defined the specific organizational roles and unified into jobs. Jobs and their unification are elements of an organizational unit inside of organizational structure, derived on the basis of differentiation and uniting tasks, activities and functions that make the overall work of the organization observed.

Content of organizational unit can be seen through the tasks, their distribution to the executors and the interaction between them [3].

There is few understanding of the construction process of the organizational unit. According to the first meaning designing of organizational units shall be conducted in 3 steps:

Defining tasks - it is necessary to know which tasks have to be done to achieve the goals of the organizational unit,

Differentiations - reducing the complexity of the tasks at a level that is appropriate to the number and skills of officers,

Interactions – will be established in order to conjoin efforts towards the execution of the tasks entrusted to the executors of observed organizational unit.

On the basis of the second meaning, organizational unit, as a part of organizational structure, consists of three parts: social system, technology and tasks. It is very important to observe with same significance all mentioned parts during the process of designing organizational unit. The first part is the social system under which are meant involved members of the organizational unit who are interrelated with formal and informal relationships. The second part is technology in it's the broadest sense. The third part is the tasks which have been distributed, interdependent and related with organizational procedures so that they cannot be changed by the wish of individuals, the officer or coordinator. Based on this meaning, we can define organizational unit as an entirety of social system, technology and tasks in which is realized the process of rational conversion of inputs into outputs [3]. During the design of organizational units within the organizational structure the first job is determining the tasks and their decomposing on the lower level tasks up to the elementary activities. The final goal of the analyzing of tasks is the level of activity which further decomposition would not give new information on the review of tasks. In order to successfully complete the process of designing the organizational unit into consideration must be taken the dimensions typical for the organizational structure. Dimensions of the organizational structure are:

Specialization - the degree of specialization is determined by the number of activities assigned to one employee,

Decentralization - the degree of decentralization is the measure of removal places of decision-making from the source of line authority,

Departmentalization – allows grouping of tasks and their executors in the organizational unit, and then organizational unit in the larger entirety,

Coordination and control [4].

3. REASONS FOR DESIGNING THE SEPARATE ORGANIZATIONAL UNIT FOR EMERGENCY SITUATIONS

In contemporary conditions, business entities seek to achieve the highest possible savings. Thus, in case of a bigger profitability, specific jobs are entrusted to other companies. This process is well-known as outsourcing and very popular is in area of safety and security. More and more companies do not want to have their own security services because of costs and make contracts with specialized agencies that will be in charge for that. Same situation is with jobs which relating to emergency management. Business entities should also engage some agency that will make documents about preparedness for emergency situations, conduct risk analyze, organize trainings with employees or some similar duties which company have to take depending on current law in domestic country.

However, regardless of the amount of the costs there are plenty of reasons why business entities should have separate organizational unit that will deal with issues related to emergencies. Firstly, nobody knows the company better than its employees. In order to prepare a business entity for emergency situation in the best way or in the case of the same to react as better as possible, it is necessary to know every detail of work and technology. Just employees that are part of the organizational unit responsible for emergencies can efficiently and effectively implement all phases of emergency management. People with adequate education in the field of emergency situations, after a period of work in the business entity will acquire a real picture of all aspects that are essential for better protection against natural and other disasters. Also, this person will always be aware of any change in the business entity in the shortest possible time, and will be "on the spot" if necessary. For this reason, for the company should not be more expensive to have permanent employees within the separate organizational unit for emergency situations than to take process of outsourcing for those jobs. It is necessary to be mentioned that small organizations may be able to get by with only one person doing this work, while larger organizations will have particularly organizational unit consisting of several employees in coordination with other departments to provide needed information. In this paper the emphasis will be on larger organizations that have a need for this.

It is normally that things change in the organization—people come, people go, programs start, programs stop, but regardless of that the continuity of work is provided if the company in its composition has permanent employees in charge of tasks about emergencies. For example, some business entity has a contract with specialized agency for tasks of emergency management. After few months this agency can be closed or some another agency will give better offer and company will change their provider for these services. Again everything must be started from beginning and time is lost. On the other hand, if company has a separately organizational unit for emergency situations it is much easier to take changes. Someone will leave company because of pension. Management of business entity will be aware of this circumstance and will engage new employee for this area in a certain period which will be enough to prepare this person to continue with job normally after retirement of colleague.

The American Federal Emergency Management Agency (FEMA) highlights the reasons why it is important to establish an organizational unit for emergency situations, such as: It encourages participation and gets more people invested in this process,

It increases the amount of time and energy participants are able to give,
It enhances the visibility and significance of the emergency management,
It provides for a broad perspective on the issues [1].

One thing also should help to business entities to make decision is it necessary to form organizational unit for emergency situations or not. That is risk analysis. Risk analysis is the process of identifying credible threats that could cause an interruption in an organization's business [5]. It is important to recognize that some risks can come from within, for example, an organization that has a kitchen on its premises or one that stores hazardous cleaning chemicals onsite. Other risks come from external forces such as flood, fire, etc. The potential may include fire, water damage, explosion, physical security, loss of power, and natural disaster. A thorough risk analysis should take into account an organization's physical surroundings, and includes such things as security, emergency lighting in halls and stairways, fire escape routes and exits, storing of toxic chemicals, etc. An analysis of risk, done by a numerical rating system quantifies the possible threats and also looks at ways to reduce the threats. This is also known as disaster avoidance [5]. Some threats you can mitigate or avoid. While you can't prevent a natural disaster, you can plan for what to do if such a catastrophe occurs. In this way, business entities should recognize levels of different risks which can threaten the work of company. It is certain that the company with higher level of different risks from natural and other disasters should have the organizational unit only for tasks related to emergency management. This option will help to reduce risks and to have better reaction in a case of emergencies in order to loss and damages have been reduced at the lowest possible level.

4. CONTENT AND PROCEDURE OF DESIGNING THE ORGANIZATIONAL UNIT FOR EMERGENCY SITUATIONS

In order to form the organizational unit for emergency situations, which will work in the most efficient and effective way, attention must be paid to a specific number of elements that will constitute the content of this procedure. Firstly, from which should start, is the analyzing of the tasks that this part of the business entity will perform. During this, is necessary to rely on existing legislation in the field of emergency situations where are obligations of each company are precisely defined. Also, helpful tool should be risk analyze by which management can recognize difference and scope of tasks that future organizational unit will be responsible for. The result of analysis of tasks will be the catalog of jobs, or more precisely, all listed jobs that will perform an organizational unit for emergency situations. After analyzing of the tasks it is necessary to synthesize them. The result of synthesis of tasks will be job positions as the smallest organizational entity. In this way can be assigned tasks, activities and responsibilities to job positions where they will be implemented. On the end of this, management of company or somebody who is in charge of procedure of designing the organizational unit for emergency situations would have more precise picture of what this part of organization should concrete work. Now they can determine the size, structure and number of job positions. There is a possibility that after the analysis and synthesis of tasks may be determined that it is not necessary to establish the organizational unit for emergency situations, already it would be enough only one person for whole. In this case, there is no need for further proceedings, and immediately can begin engagement of the person who will work on these tasks. However, something that must be taken into account is working time,

horizontal and vertical specialization. Time period of execution of a work task in the workplace is called necessary work time. If the working time exceeds 176 hours per month then it is necessary to engage more than one person for tasks related to emergency situations [3]. Many companies make mistakes thinking that only one person should be engaged for emergency management. But, especially in larger business entities where appear a lot of risks, where is in use hazardous materials, one person can only work with fire protection, while on the opposite sides there have to be another or more persons responsible for other risks and obligations in the area of emergency situations. Efficiency of each job though specialization increases to one point. After that point the job becomes boring, and the workers get tired faster. To avoid this should be approached expanding and enriching of work that indicate increasing the number of different activities and greater autonomy in their work, which creates a greater motivational potential of work. In case of organizational unit for emergency situations one person should be responsible only for prevention. But, if during some period of time this job becomes uninteresting for this person, chief of this organizational unit should think about new tasks in order to keep working motivation at a high level. One of the recommendations is that after analysis and synthesis of tasks, when company creates job position within organizational unit for emergency situations should be led by phases in emergency management. So, depending on results of previous process, this organizational unit would consist of one person responsible for implementation of preventive measures in technical terms from all risks recognized through risk assessment, while second will be engaged for training and practicing of all employees to adequately respond to emergency situations. Also, person on the last job position should be responsible for managing of specialized unit for the first response to emergency situations. This unit would be consisted of few persons and will be of organizational unit for emergency situations in company. They should be something as professional rescuers with all necessary knowledge and certificates for working in the field of protection and rescue. It is necessary that organizational unit for emergency situations has one more person engaged to follow legal regulations in the field of emergency situations and to be responsible for any kind of inspections in this area. As other organizational units this also should have its head that would coordinate it. However, as a result of the specialization of officers occurring problems of uncoordinated functioning. It is necessary now, in the next phase of designing the organizational units for emergency situations, coordinate actions of employees who would be part of it. If this would not be done there would be uncoordinated functioning due to:

The difference in orientation toward goals,
The difference in time orientation and perception of time,
The difference in the orientation of interpersonal relations,
The difference in the structure formalization [3].

These differences create the need for coordination. To ensure the necessary coordination in the must be established mechanisms of integration of efforts toward the achievement of common goals. This should be achieved by grouping tasks and their executors which differences and connections in the real are optimal, so the result of task groups and executors will be called organizational units or departments [4]. That is the case also with designing of organizational unit for emergency situations. After analyzing and synthesize of tasks the next step is grouping them in the department or organizational unit for emergency situations. After grouping, this organizational unit would be characterized with:

The existence of one manager which is in accordance with the principle of unity of command,

The use of certain, limited resources,

Increased integration within unit,

Responsibility for recognizable and measurable contribution to the overall results of the organization.

It is recommended that in case of designing the organizational unit for emergency situations during grouping of tasks should be applied bottom-up approach. This approach means that we have created jobs with a list of tasks and the required number of employees, and that from partition phase of the overall task of the future organizational unit are known links between certain activities in the workplace and also between them [4]. Grouping jobs in the departments of the lowest levels of organization leads to the formation of the first line of management consisting of managers at the lowest level. In this way organization unit for emergency situations should get her manager. In some cases there is a need for further activities of grouping tasks and their executors. That means forming sectors which includes few organizational units. Regarding to organizational unit for emergency situations it is unlikely to be need of forming bigger organizational part than it is one unit. Also, during designing of organizational unit for emergency situations, grouping can be conducted in parallel, or even as a preliminary procedure to assigning of tasks. Some benefits which of grouping of recognized job positions in one unit for emergency situations should be simplicity as results the similarity of activities, facilitated coordination and professionalism, efficiency and creating of volume typical for work in functional units. On the other hand one of the disadvantages may be excessive centralization of authority because of the need for coordination.

Following which must be taken into account during the designing the organizational unit for emergency situations is the degree of centralization, or decentralization. This implies which degree of freedom in decision-making will have manager of the organizational unit for emergency situations. In the case of centralization degree of delegating, or transferring decision-making at lower levels is small and decisions are taken at higher levels of the hierarchy. On the other side decentralization allows that more decision are made at lower levels of hierarchy [3]. In case of organizational unit for emergency situations it is recommended decentralization. It is better that manager of this unit has a higher degree of independence in decision-making. This is because the area of emergency management is very specialized and people from other segments of the business entity very difficult will understand need for some decisions. If this manager will not have high level of freedom may appear case when is needed quick decision, which is very typical for emergencies. Time will be lost with centralization and as consequence damage will be bigger. Of course, manager of organizational unit for emergency situations will have someone above him who will control him for realizing of job. That should be someone in top management of company. It is necessary to be defined when that manager of organizational unit for emergency situations should make decision alone, and when should not. But, in many cases it is better to do alone. Specifically, when some emergency situations happens decisions probably will be made on higher level, but with a lot of advices prepared within organizational unit for emergency situations if it exists in the business entity. For other kind of decisions it is recommended to let manager of unit to make it alone.

Very important thing during the process of designing the unit for emergency situations is coordination, or harmonization with other parts and units of the business entity. In this case coordination is defined as the process of harmonizing the different characteristics, components, and activities of the organization in order to achieve a common goal [4]. Organizational unit for emergency situations in her work can not appear independently and must have a coordinated operation with all parts of the business entity. Base to realize this is a good communication with other organizational units. It is necessary to determine the exact way of the vertical and horizontal communication with other parts of the company. It is possible to appear practical communication problems as inability or high communication costs of employees, or the exponential growth in the amount of information in relation to the number of employees. The problem of lack of communication of officers should be solved with the development of new communication channels. The development of information and communication technologies has enabled the progress of communication as components of coordination. The organizational unit for emergency situations should be aware of any change that is happen in company. Only with adequate and accurate communications with all units of company this unit responsible for emergency situations would prepare and adequately protect employees from unexpected threats. One solution may be an internal software package that will be used to monitor all the relevant facts of emergency management in company. Expressed importance of harmonization with other parts of the business entity is seen, for example, when performing exercises to prepare employees for emergency situations. But certainly the most important thing is harmonization in the event when the business entity is directly exposed to the threat of natural or other disasters. This indicates that when designing the unit for emergency situations, great attention must be paid to proper linking and harmonizing with all parts of the company, because everything can be affected.

And the last thing to which attention should be paid when designing the organizational unit for emergency situations is the formalization as the degree of specified the rules and templates of behavior of its members and the way they do the job. This can be formalized without a large number of written rules. But, in this case there must be a strong endeavor of manager that with use of available resources impose certain beliefs and rules of conduct. Something that is very important in case of unit for emergency situations, and that should be formalized, is the formalization of job positions and the formalization of work processes. During the formalization of job positions specification refers to work performed by the worker at the workplace, resulting in job descriptions. On the other hand, during the formalization of work processes specification refers to the course of work activity which results with operating procedures. Both are very important and necessary to be done for organizational unit for emergency situations.

5. EXAMPLES OF BUSINESS ENTITIES WHICH HAVE THE ORGANIZATIONAL UNITS FOR EMERGENCY SITUATIONS

A large number of business entities around the world realize the need and importance of an adequate approach to management in emergency situations. Due to the need for corporate social responsibility, as well as reduce casualties and damage, increasingly is in use self-organizing approach in this area instead of outsourcing agencies. From a

multitude of companies that in their composition have organization units for emergency situations, for the purpose of this paper we will single out two: Gazprom and Rosneft.

Due to the nature of business in the oil industry, Gazprom pays special attention to the prevention, monitoring and management of emergency situations and the development of industrial safety, for the protection of employees and assets of Gazprom in the case of natural disasters, technical and technological accidents and fires. For the application of modern technologies in the function of emergency response and safe operation of Gazprom in terms of emergencies, Gazprom attracts leading partners in this area. Overall management of emergency management activities at Gazprom is the responsibility of a deputy chairman of the Management Committee. How much attention is paid to emergency management prove the fact that activities at Gazprom member organizations are coordinated by a special-purpose company, Gazprom Gazobezopasnost, which fulfills the functions of Gazprom's emergency rescue service and is included in the list of federal instant readiness forces of the State Uniform Emergency Control System. The

company responsibilities include both planning and carrying out work to prevent injuries, fires and accidents at Gazprom facilities, and carrying out work to prevent and eliminate gas, oil and water inflows, emissions, uncontrolled gas and oil well leaks including continental shelf fields, carrying out hazardous gas explosion work, and personnel training for OAO Gazprom and its subsidiaries [2]. So, within the whole company is formed a special that deals with these issues, which is a significantly higher level of organization compared to the organizational unit for emergency situations. However, it should be noted that all the companies that are part of Gazprom's have their organizational units for emergency situations which apply same policy as the Gazprom Gazobezopasnost. Example of this is Petroleum Industry of Serbia which within the function for organizational matters has organizational unit responsible for emergency management. Also, Gazprom pays special attention to developing effective approaches to safe operation. All group companies, through their organizational units for emergency management, develop emergency response plans (including elimination of accidental oil spills by oil producers) for various scenarios that include joint action of personnel and rapid response forces. To ensure high emergency preparedness, mentioned organizational units conduct regular on-site exercises that include full-scale training in life-saving, accident localization and response, and integrated emergency exercises involving various services after which employees undergo trainings and certification. Based on emergency exercise results, response personnel performance is evaluated and measures are taken to improve emergency preparedness, if required.

The Rosneft's activity in the area of emergency management and civil defense is aimed at implementation within the Company of the unified state policy of the Russian Federation in the field of civil defense, development and efficiency improvement of safety methods and means, protection of employees, material assets of Rosneft and the Group's Companies against the dangers arising from conduct of military operations or in consequence of these actions, in case of natural and manmade emergency situations as well as for faultless industrial activities of the Company in the context of war time and emergency situations [6]. In that order Rosneft has the separate organizational unit in form of functional block called "Civil defense and emergency prevention" (CDEP Block) as the structural unit of the Rosneft's empowered to solve the civil defense and emergency prevention problems operating under direct control of the Rosneft's top-manager, responsible for organization of civil defense in peace time, and structural units (employees) of the Group's Companies, empowered to solve the civil defense and

emergency prevention problems working under direct control of the deputy director of the Group's Company, responsible for organization of civil defense in peace time. Rosneft recognize this unit as one of the most important with special emphasis that organization and management in this area is one of crucial functions of Rosneft and the group's companies and constitute protection elements for the company's employees and assets.

6. CONCLUSION

Whatever one chooses to call it - emergency management, crisis management or emergency preparedness - the goals are ultimately the same: to get an organization prepared and running in the event of an interruption. Emergency management is a dynamic process. Planning, though critical, is not the only component. Training, conducting drills, testing equipment and coordinating activities with the community are other important functions. It is very difficult in larger business entities that this function performed only one person. Also, engagement of specialized agency that will conduct activities related to emergency management, at the beginning can make as a cheaper option. Then it will be clear that the best option is that company performs alone this job since no one else knows the company better than its employees. For these reasons is recommended to design the separate organizational unit for emergency situations. Some positive aspect and benefits are:

It helps companies fulfill their moral responsibility to protect employees, the community and the environment,

It facilitates compliance with regulatory requirements of federal, state and local agencies depending on forms of state institutions responsible for the field of emergency situations,

It enhances a company's ability to recover from financial losses, regulatory fines, loss of market share, damages to equipment or products or business interruption,

It may reduce company's insurance premiums.

It is certain that only larger business entities would need to possess this type of organizational units, although and others if deal with specific activity especially with the presence of large quantities of hazardous materials should think on this topic.

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CLIMATE CHANGE AND ENVIRONMENTAL SECURITY

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Abstract: *Global geopolitical changes, the impact of climate changes, environmental protection, energy security and the growing global interdependence are becoming the focus of traditional national security. Ecological problems are becoming a decisive factor in the international political and geostrategic negotiations, while the transnational nature of environmental security calls for creation of new forms of cooperation and defense strategies. Strategies are based on the ability to identify environmental threats, and are reinforced by an increasingly powerful technology for the detection and monitoring of environmental damage. Climate changes and environmental security are becoming a global security problem, as they directly initiate open conflicts, have a potential to destabilise regimes, may lead to migration of population, and even disintegration of a state. The issue of environmental security is global, but also regional and national; its solution depends on the political, social, cultural, religious, economic and other forms of support and cooperation, and it requires a creation of a higher level of environmental responsibility. Mechanisms for joint action must be found at a national and global level to reduce the insecurity originating from all ecological threats. The paper presents the solutions to the impact of climate changes on forest ecosystems. These solutions involve a timely application of a range of adaptive measures aimed at mitigating the effect of changes and thus reducing the security threats at a national and regional level.*

Key words: *climate change, model, ecological security, forest ecosystems*

1. INTRODUCTION

The focus of traditional national security is increasingly shifting towards global geopolitical changes, impact of climate changes, environmental protection and energy security, as well as to growing global inter-dependence. Ecological problems related to security are becoming the decisive factors in international political and military negotiations. The transnational nature of the environmental security is pursuing new strategies of defense and cooperation. Multipolar global political, economic, and military power, growing human demand for natural resources, economic crises, population growth, deepening of the differences between developed and underdeveloped countries, rapid advancement of technology, an increasing number of criminal and terrorist organizations, and proliferation of weapons of mass destruction increase uncertainty about the future of international security [2]. These changes are so rapid and complex that it is increasingly difficult to develop a realistic long-term strategy and impossible for one nation to manage these changes alone. The ecological diplomacy contributes to trust building, while the non-traditional security issues – including environmental, migration and social development – are becoming the standard aspects of security planning. The ability to identify ecological threats is reinforced by an increasingly powerful technology for detection and monitoring of ecological damage. Climate change is specified as a key issue “that will play a significant role in shaping the future security environment.”

Climate change and environmental degradation are recognized as a threat multiplier with large-scale implications on the availability of natural resources. While the countries that are affected by the lack of natural resources may experience local civil disorders, resource-abundant countries may experience increased immigration and exposure to extremism, terrorism, and organized crime (*Quadrennial Defense Review 2010*). The Millennium Project defines environmental security as environmental viability for life support, with three sub-elements: preventing or repairing military damage to the environment, preventing or responding to environmentally caused conflicts and protecting the environment due to its inherent moral value. Military organisations integrate the environment to an increasing extent in the analyses of conflicts in all their phases: *‘Integration of environmental considerations in military actions provides strategic advantage in combat and post-conflict operations, protects health, security and safety of troops and develops diplomatic relations and trust with the local population of neighbouring countries, while increasing the success of a mission.’*

2. INTERNATIONAL CONFLICTS AND ENVIRONMENTAL EFFECTS

Since the mid-twentieth century more than 90% of major armed conflicts have taken place in the countries with biodiversity hotspots. The Pacific Institute’s Water Conflict Chronology Map identifies more than 100 water-related conflicts that have occurred over the past 25 years. The conflicts driven by the factors related to natural resources and/or degradation of environment are twice as likely to get back to violence or turn back to wars within five years. According to a study of UNEP less than 25% of the relevant peace agreements address the issues of environmental resources (UNEP, 2009).

The environment is also frequently used as a military tool – from bombing infrastructure to poisoning waters and destruction of ecosystems. Not only does degradation of environment contribute to escalation of conflicts, but it prolongs it, hindering the employment of peace troops in that area.

Although ‘Protocol 1’ of the Geneva Conventions contains the text about the protection the natural environment, mechanisms to protect natural resources during armed conflicts are still lacking, as well as the permanent international authorities that would monitor violations and determine the responsibility and claims for the damage in those situations. Furthermore, there is no agreement on the definitions of the terms ‘widespread’, ‘long-lasting’, and ‘severe’ or a standard definition of what makes a “resource conflict” or illegal resource exploitation and trade. The majority of international legal provisions on the protection of the environment during armed conflicts, including the ICRC Guidelines on the Protection of the Environment during Armed Conflict (1994), are designed for international armed conflicts, while the majority of current conflicts are internal; therefore the legal instruments do not apply to these situations. UNEP recommends the formation of a Permanent Arbitration Tribunal: Disputes that concern damage inflicted to the environment during an armed conflict should be annually presented at the UN General Assembly. There are proposals for the amendment of the Rome Statute of the International Criminal Tribunal concerning the use of specific arms in international and non-international conflict situations, as well as the extension of the list of war crimes, which should include the use of chemical and biological weapons, as well as some forms of conventional arms and land mines. It has been proposed that terrorism comes under the jurisdiction of the International Criminal Tribunal. An increasing number of

endangered countries fail to overcome cultural, social, political, and economic barriers and successfully address environmental challenges. UNDP states that environmental stress may undermine the security of the Arab region. Lebanon might face the lack of fresh drinking water by 2015, due to the combined effects of several factors, including the 1975–90 civil war and the years of political turmoil, water rights disputes with Israel, poor water management, inappropriate infrastructure, and growing population. It is estimated that 80% of the conflicts in Yemen are over water. 90% of the water in Yemen is used for agricultural purposes, 50% of which is used for the production of a mildly narcotic plant, called qat. The plantations are controlled by the qat mafia. However, the problems related to water, food, and security could be resolved by offering farmers an alternative to qat. The UN Mission in the Gaza conflict (December 2008–January 2009) found evidence that both Israeli and Palestine committed violations of international law by using white phosphorus, fléchette missiles, DIME (dense inert metal explosive) munitions, and depleted uranium. After the conflict, it will take centuries to restore the environment to its previous state. The extent of the ecological disaster caused by the conflict in Iraq is immeasurable. Unexploded bombs and 25 million of land mines are polluting the soil. Hazardous waste (chemical waste, rubble and garbage) that is leaking out of destroyed factories, chemical weapons and depleted uranium have created 105 contaminated areas, making more than 60% of Iraq's fresh water polluted. Environmental degradation and hazardous munition leftovers in many post-conflict areas around the world threaten the lives and health of the present and future generations and may be an obstacle in the way of lasting peace. The abandoned ordnance that has been leaking since World War II increases dangerously high levels of heavy metals and other toxic chemicals contaminating the oceans and endangering marine ecosystems and human health.

3. ACTIVITIES OF INTERNATIONAL COMMUNITY ON ADDRESSING THE ECOLOGICAL IMPACT

The Convention on cluster munition, which came into effect in August 2010 - two years after its adoption, bans the use, manufacturing and transport of cluster munition, sets the deadlines for destruction of cluster munition stockpiles and destruction of cluster munition on contaminated soil, and attributes the responsibility towards the affected communities.

During the mid 2010, thirty-four countries ratified and one hundred and six countries signed the Convention. This agreement demonstrates how the 'coalition of the willing' can successfully lead to imposition of international regulations. This may encourage other similar negotiations over other types of arms. In the meantime, the concern related to nuclear threat remains.

The International Agency for Atomic Energy has stated that between 1993 and the end of 2009, 1,784 instances of unauthorised transactions took place (from an illegal disposal to an appearance of nuclear material of unknown origin). By the end of 2009, one hundred and nine IAEA countries had participated in this Programme – Report. Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan, supported by a consortium of domestic and international organisations, are introducing measures to reduce the danger from nuclear and other hazardous material, remained from the Soviet era.

About 800 million tonnes of radioactive and poisonous waste is stored in inadequate storages, threatening ecological contamination. A problem of an increased threat from 'dirty bombs' is also evident. By coming into effect of Pelindbada Treaty – AFRICAN NUCLEAR WEAPONS FREE ZONE, nuclear weapons will be banned in the entire Southern Hemisphere. Other regional agreements on ban of nuclear weapons include the ANTARTIC Treaty, Tlatelolco Treaty (for Latin America and the Caribbean), the BANGKOK Treaty (for south-east Asia) and the Semipalatinsk Treaty (for Central Asia). The representatives of the Japanese Parliament and the Republic of Korea started the initiative for formation of East-Asian Nuclear Weapons Free Zone. Egypt and other Arab countries are promoting the creation of Middle-East nuclear weapons free zone, while the American Nuclear Posture Review has an objective to reduce the role of nuclear weapons in the USA National Security Strategy. A proposal of a law on production, use, sale, transport and possession of nuclear weapons was put forward in the Belgian Senate.

The new Strategic Arms Reduction Treaty (START) has been signed by the USA and Russia (who jointly possess more than 90% of the total nuclear weapons in the world). This Treaty stipulates reduction of nuclear arsenal; however, as many critics have pointed out, it does not solve the problem of disposal of nuclear material in the weapons. 'Global Zero' is a new effort by world leaders that aims at eliminating the entire nuclear weapons worldwide in the next 25 years.

While Conventions on chemical and nuclear weapons have developed mechanisms for their implementation, the Convention on Biological Weapons lacks similar tools. The negotiations on this issue are at a deadlock.

The report of the Commission on the Prevention of Weapons of Mass Destruction Proliferation warns that it is probable that an attack will occur in 2013, which will involve weapons of mass destruction (most probably biological attack).

4. DEVELOPMENT OF NEW SECURITY SYSTEMS, BUT ALSO OF TERRORISM

New technologies offer improved detection, clearing, monitoring and the possibility of surveillance. Intelligent "battlefield" robots will have installed into their programmes elements of rules of engagement compliant with the Geneva Convention. The NASA has tested the concept of network of robust, autonomous robots, able to react to the environment. These "spiderbots" robots can be placed in dangerous environments, communicate among each other, as well as with the outer world, including satellites, and monitor ecological situation. Ultra-sensitive portable chemical and biological devices offer enhanced accuracy in detecting, monitoring and clearing of environment, along with a high response rate (response time). However, future weapons in form of autonomous robot systems increase the vulnerability and concern regarding the possible catastrophes. The development of 'synthetic' biology, cognitive science, nanotechnologies, electromagnetic impulses and other high technology is progressing. Combined with available information and cheap components, they become a tool for production of weapons of mass destruction, as well as for the increase of terrorism and social unrests. Considered collectively, these factors increase the danger from terrorism and SIMAD (Single Individuals Massively Destructive). An "Ebomb" is based on electromagnetic impulses, and it has an ability to destroy electronic devices used in civil air transport, where, in an Electronic Warfare, a device of a size of small suitcase can

disable the supply network of the entire region. The research of computer telepathy, such as Silent Talk, might one day be used for interception and distortion of human thought. After earth, sea, air and space, the cyber-space has become ‘the fifth battlefield’ on the agenda of security experts. A disruption of critical infrastructure, such as water supply or electric power, requires creation of specific strategy against the cyber-attack.

5. A RESPONSE TO CONFLICTS CAUSED BY ECOLOGICAL PROBLEMS

The UN identifies five channels through which climate change can have security implications: impacts on lives and vulnerability of people, economic development, population migration and/or conflict over the lack of resources, displacement of entire communities (due to the sea level rise) and access to natural resources [2] [4]. An assessment study of the quantitative links between climate change and the risk of civil war in sub-Saharan Africa revealed that between 1980 and 2002, the incidence of conflicts across the continent rose by almost 50% with a 1°C temperature increase in a given year. Starting from these assumptions and using 20 global climate models, researchers have warned that if mitigation measures are not taken as soon as possible, the incidence of African civil wars could increase by 55% by 2030 compared to 1990. The Pacific Institute states that, in the following decades, the pattern of local conflicts will most probably appear in Sub-Saharan Africa, South-East Asia, India, China, Pakistan and Myanmar, although ‘the war for water’ or a war between states caused by water shortage is less probable. The warnings have been issued that terrorist group could start attacks on water infrastructure facilities, as their prime targets, whose destruction could create a problem of water availability. In addition, the discontent with the West, in countries such as Pakistan, could be intensified as the water becomes increasingly less available, which could help extremists with recruiting new members. The pattern of local conflicts is likely to occur in sub-Saharan Africa, Southeast Asia, India, China, Pakistan, and Burma in the following decades, although the “war over water” is pretty unlikely to happen. We are warned that terrorist groups could start attacks on water infrastructure systems as valuable targets and cause water availability problems. Furthermore, in the countries such as Pakistan, the widespread discontent with the West could be intensified as water resources become scarcer, which could help the recruitment of extremists.⁸⁸

UNEP states that the global sea level rose on average by 3.4 mm/year over the past 15 years, which is 80% above the IPCC forecasts. According to NOAA, the 2000–09 decade has been the warmest one since the beginning of instrumental temperature measurements in the 1880’s. The Met Office notes that a new El Niño period started in 2010. The sun began to increase its brightness, as part of its 11-year fluctuation cycle (it was at the bottom of the cycle in 2009). The global average temperature is forecast to rise by 4°C by 2060. Satellite measurements show that the ice cover has decreased by more than 40%. This fact has forced scientists to reassess the date of the first ice-free Arctic summer. There are some forecasts that the “northeast passage” for shipping around Russia’s Arctic coast and across the North Pole will become accessible within a decade. The route between Rotterdam in the Netherlands and Yokohama in Japan will be 40% shorter and

⁸⁸ In the so-called Caliphate, a state that was formed on the territory of Iraq, the main battles are currently fought over a large water reservoir in the north of the country.

at the same time it will be safer for global shipping. Circumpolar countries are constantly strengthening their scientific, economic, and military presence in the Arctic because of its substantial supply of oil and gas reserves. The number of people around the world who will need humanitarian aid due to natural disasters caused by climate change might increase from 250 million today to more than 375 million by 2015. The UK Government has announced that it will recommend doubling of the relevant UN budget funds, along with the reconsideration of the entire system. The World Bank states that poor nations will be faced with increased floods (by 75–80%), increased desertification and other disasters caused by global warming. It is estimated that by 2030, developing countries will have to spend \$75 billion a year on adaptation and \$400 billion on the advancement of the low-carbon development technologies. The EU estimates that by 2020 a sum of €100 billion a year will have to be allocated for addressing climate change issues. Countries in Africa and South Asia might lose as much as 5% of their GDP if temperatures rise by mere 2°C.

6. GLOBAL IMPACT AND VULNERABILITY

The countries most affected by climate change in the last 20 years (according to Germanwatch Global Climate Risk Index) are Bangladesh, Myanmar, Honduras, Vietnam, Nicaragua, Haiti, India, the Dominican Republic, the Philippines and China. Apart from vulnerability, the small island developing states are concerned about the lack of any bilateral or multilateral agreements for eventual relocation and sovereignty status [5]. If the current trend continues, most glaciers in the mountains of tropical Africa will have disappeared by 2030, and those in the Pyrenees by 2050. The temperatures in Tibet have risen by an average of 0.32°C per decade since 1961, which is considerably above the global average. About 70% of fresh water is trapped in glaciers. If they melt, the survival of a great number of people will become critical. According to the World Economic Forum, almost 4 billion people will be living in high-water areas by 2030. In order to supply food for 9.1 billion people by 2050, world food production should increase by 70%. According to some estimates, 38% of the world area, in 8 out of 15 existing eco-regions, is in danger of desertification due to unsustainable land use practices. Genetically-engineered seeds are adapted to drier conditions and help produce higher yields. However, researchers warn that growing corporate control over seeds is decreasing diversity of traditional varieties and traits that help farmers adapt to the effects of climate change, cutting the profit of poor farmers and strongly affecting food prices. Furthermore, even if all global targets are met, food prices will still rise by additional 76% by 2020 and another 600 billion people will face famine, warns ActionAid.

Almost 10% of the world's population is at risk of forced migration due to climate change, and up to 150 million 'climate refugees' might move to other countries by 2050. Tuvalu, Fiji, the Solomon Islands, the Marshall Islands, the Maldives, and some of the Lesser Antilles are all in danger of losing a significant portion of their land in the next 50 years, while the countries in which large migrations might occur include Bangladesh, Kenya, Papua New Guinea, Somalia, Yemen, Ethiopia, Chad, and Rwanda. In March 2009, an asteroid missed the Earth for 77,000 kilometres, which is 80% closer to the Earth than it is to the Moon. If it had hit the Earth, it would have wiped out the life on 800 square kilometres. A similar occurrence happened in January 2013, when, in addition to an asteroid passing close to the Earth, a meteor fell in the Russia's Ural region,

injuring over 1,500 people and inflicting an enormous material damage. The NASA has already developed programme for monitoring objects in space, while Italy and Spain are cooperating on NEODIS (Near Earth Objects Dynamic Site). The Russian State Duma is discussing the planet security and how to complement its national space programme with the study on asteroid hazard and possible ways of protecting the Earth. The modelling system is improving; however, a better coordination between data, science, research, allocation policy and funds is necessary to process adequately the complexity of climate change effects and create a satisfactory adaptation, impact mitigation and security strategies. The Millennium Project is developing “Climate Change Situation Room” as a collective intelligence aimed at creating connection between science, politics, technology and activities on addressing climate changes.

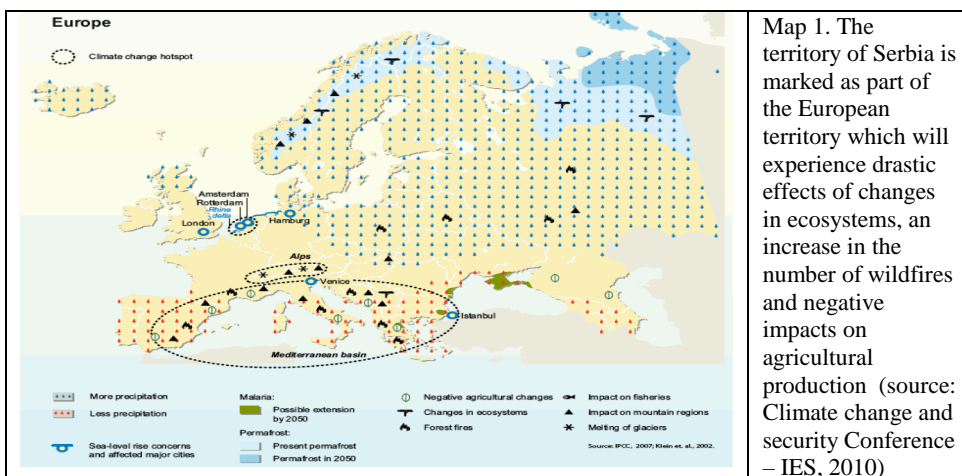
7. CLIMATE CHANGES AND THE CONCEPT OF SUSTAINABLE USE OF RENEWABLE NATURAL RESOURCES IN SERBIA

At the Climate Change and Security Conference - IES held in Brussels on February, 17 2010, the territory of Serbia was marked as part of the European territory which will experience drastic effects of changes in ecosystems, an increase in the number of wildfires and a negative impact on agricultural production (Map 1).

The study of various climate change scenarios (global, regional) shows that the territory of Serbia is one of the regions in which climate change is threatening the sustainable use of natural resources. Within the following decades, the entire region of Southeast Europe could experience even more harmful effects of climate change on (genetic, species and ecosystem) biodiversity. They would be observed as changes in the altitudinal and latitudinal zonation of vegetation, increased risk of species extinction caused by synergistic effects of climate change, and habitat fragmentation, redistribution and migration or disappearance of certain forest species due to high temperatures and declining groundwater levels, etc.

The Earth is facing another mass extinction of plant and animal species similar to the one that happened 65 million years ago when dinosaurs became extinct. Increasing human activity has destroyed a great number of habitats that are usually fragmented or damaged by long-term pollution from different sources.

Climate changes cause a long-term impact changes on structural spatial characteristics of global biodiversity. In addition to the direct impact on plant phenology through an increase of maximum or minimum annual temperature, as well as the change in the precipitation amount and its distribution per seasons, climate changes also produce an impact on vegetation through changed frequency of extreme events (summer droughts, frost, for instance).



Europe has been warming faster than the global average. By 2007, the average annual temperature of the European continental area was 1.2⁰C higher than the temperature in the pre-industrial period, while for the combined continental-sea area it was higher by 1⁰C. Eight out of twelve years from 1996 to 2007 were among the warmest since 1850.

Different climate model projections based on different climate change scenarios indicate that the annual temperature is likely to rise a further 1 to 5.5⁰C by the end of the century. During the winter, the highest warming is expected in the east and north, and during the summer in the south and in the Mediterranean part of Europe. The domination of a negative trend of the annual air temperature in Serbia ceased in 1982. Since 1983, particularly until 1987, positive trends have been detected, first in short runs, than in increasingly longer; hence, 1983 can be marked as a year of beginning of an increase of the annual temperature in Serbia, which is still ongoing. The precipitation amount trend for Serbia, for the same period, indicates that the annual precipitation amounts have shown a decreasing trend in the last 55 years. The intensity of decrease is 5% of a regular 50-year decrease. As the length of an observed period decreases, the nature and the intensity of a trend changes. In Serbia, the beginning of the trend of an increased air temperature is followed by a decrease in annual amounts of precipitation.

In addition to changes in the temperature and precipitation regime, changes have been recorded in the intensity and frequency of occurrence of climate extremes - droughts, floods, landslides, land erosion, hail storms, blizzards and avalanches, waves of extremely high air temperatures, frosts, short-duration heavy rains, forest fires, conditions for spreading of epidemics and pests, causing human casualties and material damage.

Estimates based on climate modelling, indicate that, according to moderate scenarios, the annual temperature in Serbia will increase by 2.6⁰C by the end of the century. Warming will not be evenly distributed during a year; summers will be warmer by 3.5⁰C, autumns and winters by 2.2⁰C, and springs by 2.5⁰C. According to the most adverse scenario, the increase of mean annual temperature by more than 5⁰C is expected.

According to the moderate scenario, a decrease in precipitation ranging from 15 to 25% is expected in Serbia, while according to the most adverse scenario, a precipitation decrease will reach even 50%. An increase in frequency, intensity and duration of drought has already been recorded in Serbia, which is a result of an increased

temperature, a decrease of summer precipitation and higher frequency of longer dry periods. This trend will be particularly pronounced in the south-east and east Serbia, since the Serbian territory is located in the region characterised by the highest frequency of drought occurrence. An increased duration of vegetation period is expected.

Negative effects will be particularly visible through frequent occurrence of extreme atmospheric phenomena, such as droughts, storms, extremely high temperatures, intensive erosion processes and occurrence of plant diseases and pests.

The increase of the mean air temperature will cause a shift of climate, and hence vegetation zones towards the geographical poles, as well as a shift in terms of the altitude. The temperature change of 1°C will cause a vegetation shift towards north ranging from 200 to 300km, as well as a shift towards higher altitudes ranging from 150 to 200m. In addition to vegetation shift towards the geographical poles and higher altitudes, global warming will cause the change of vegetation structure. Desiccation of trees (forests) will increase as a result of inadequate ecological conditions of habitats and an increase in entomological and phytopathological diseases. Climate change will cause changes of a growth rate of particular species, as well as hinder natural regeneration due to change of humidity in habitats. An increased occurrence of forest fires and atmospheric disasters is also expected.

Climate changes will cause changes in natural ecosystems not only in terms of their dislocation, but their structure. A biological ability for adaptation will be lowered and diversity will be reduced. The most endangered communities and species are those with limited abilities for adaptation.

The most serious problem of adaptation of forest and shrub communities to climate changes is the rate of the change. In other words, the intensity of change of climate parameters is higher than the natural ability of many species to adapt to newly-created conditions. This is particularly apparent due to high fragmentation of terrains, which will limit future migration. Climate changes occurring during mild winters caused shifting of many European plant species towards the north and higher altitudes. Mountain ecosystems in many parts of Europe are changing; species adapted to cold are driven out from their previous habitats by species better adapted to warmer climate. By the end of 21st century, distribution of European plant species will be shifted several hundred kilometres towards north, forest areas will be narrowed in the south and extended in the north, while 60% of the mountain plant species will probably die out.

It is very important to monitor changes in ecological conditions of habitats and their spatial distribution in climate changes. For that purpose, a model of change of accumulated temperature $>5.6^{\circ}\text{C}$ was designed, depending on the increase of a forecast temperature by 1° , 2° , 3° , 4° and 5° [8] [9] [10]. Based on the model and the related scenario, it can be concluded that a drastic change in the number and structure of Serbian forest ecosystems is imminent within a relatively short period.

160 habitats of broad-leaved deciduous forests have been recorded in Serbia. The air temperature increase by 1° decreases their number by 4.4%; the increase by 2° decreases the number by 6.2%; the increase by 3° decreases the number by 20.6%; the increase by 4° or 5°C decreases the number of broad-leaved deciduous forests by 40%.

The total number of forest habitats in Serbia is 210. The temperature increase by 1° reduces the number of habitats to 198, while the 2° increase reduces their number to 192. The temperature increase by 3° reduces the number of habitats to 159; the 4° increase reduces the number to 131. The 5° increase will reduce the number of habitats to 116, that is, by 44.8%.

The total number of coniferous forest habitats in Serbia is 32. The increase of air temperature by 1⁰C will reduce their number by 12.5%; the 2⁰C increase will reduce the number by 18.7%; the 3⁰C increase will reduce the number by 25%; the 4⁰C increase will reduce the number by 65.6% and the 5⁰C increase will reduce the number of coniferous habitats by 68.7%.

The total number of mixed deciduous-coniferous forest habitats in Serbia is 18. The 1⁰C increase will reduce the number of habitats by 5.5%; the 2⁰C increase will reduce the number of habitats by 11.1%; the 3⁰C increase will reduce the number of habitats by 55.5% and the increase of temperature by 4⁰C or 5⁰C will reduce the number of mixed deciduous-coniferous forest habitats by 83.3%.

The total number of shrub habitats is 72, where the 1⁰C or 2⁰C increase of air temperature reduces their number to 70. The 3⁰ temperature increase will reduce their number to 64, while the 4⁰ temperature increase will reduce their number to 51. The 5⁰ temperature increase will reduce the number of shrub habitats to 41, that is, by 43.0% in comparison to their present number.

The most species will respond to climate changes by migration, which will cause changes in composition, structure and representation of plant communities. Certain species and plant communities will migrate, while the other will simply become extinct, on account of a faster rate of shift of climate zones in comparison to the rate of migration of certain types of forests. Since two thirds of the Serbian territory consists of mountain regions, and there are species whose population is limited to mountain peaks, there are no mountain corridors for their migration. Those species will be among those most severely hit by climate changes, given that they are already vulnerable due to low population and isolation. Most of the mountain peak species are endemic or steno-endemic, hence, there is a high probability of their extinction, which will significantly diminish a region's biodiversity.

The climate change creates favourable conditions for the appearance and acclimatisation of new alien and invasive plant species. Invasive species produce a negative impact on biodiversity and are globally considered a second largest threat to biological diversity, immediately after a direct destruction of natural habitats. Invasive species drive out autochthonous species from their habitats, change the structure and composition of plant communities and reduce the total abundance of species. Ecosystems that have already been exposed to a negative human impact, which has reduced their diversity, exhibit an extreme vulnerability to invasive species.

The expected effects of climate changes on forest ecosystems, forest communities and species of tree, shrub and ground vegetation, are the following:

1. shifting of boundaries of certain forest types with respect to the latitude and altitude;
2. different natural re-distribution of forest types with respect to latitude and altitude;
3. considered from a long-term perspective, extinction of certain plant communities;
4. different composition of certain plant communities with respect to a multi-storey and social position, involving extinction of some species and appearance of others;
5. change of attitude of certain species towards light;

Forest communities will be more exposed to various adverse impacts, which are a direct or indirect result of climate change. In addition to the above-mentioned, it is significant

that a higher level of risk, related to the expected adverse effects, is associated with relict, rare and endangered forest communities and their primary, distinctive tree species. Considered cumulatively, the above-mentioned effects will have a direct impact on the possibility of preservation of biological diversity and viability of rational management of these resources.

As the microclimatic conditions change at the global level, a soil moisture regime is also changed. If aridisation takes place during a vegetation period, dry periods, i.e., the period when the soil lacks sufficient moisture, are also prolonged. The soil water reserve drops below the lentocapilar capacity, while forest trees slow down the transpiration process. The transpiration slowdown causes the slowdown of all other physiological processes. Under such conditions, even with very favourable chemical properties and high fertility of soil, forest trees are not capable of exploiting the production potential of the soil due to slowed physiological processes. In the event of further reduction of moisture to the point of withering, dying of certain forest trees will occur. Dying of mesophilic species in forest ecosystems will occur first, followed by dying of xerophytic trees of lower vitality. Such change leads to a change of floristic composition of relevant phytocenoses. Apart from the change in quantity and chemical properties of organic matter that annually reaches the soil, the change of floristic composition of phytocenosis in habitats may result in a change of a protective and hydrological function of a forest. In such situations, under the influence of exogenous forces, a new balanced state of pedogenesis and physical degradation is established. Depending on orographic, edaphic and newly-created vegetation factors, soil may succumb to intensive erosion processes.

8. ADAPTIVE ACTIVITIES IN FORESTRY

The existing concept of sustainable use of natural resources and, consequently, forest ecosystems, is experiencing a crisis. While developing a 'new' concept of sustainable use of forest ecosystems, answers must be provided to a series of questions, among which certainly the most important are the following:

- What types of research will aid a development of the strategy of adaptation to climate changes?
- What are the educational needs aimed at raising awareness of climate changes and facilitating easier adaptation to climate changes?
- What must be known when estimating a level of forest response to climate changes?
- What activities in forest management can be performed without endangering future ecosystem functions?
- What are the obstacles to implementation of adaptation measures in forest management?
- Are current monitoring systems adequately following the changes caused by climate changes and enabling implementation of acceptable responses?
- What forest ecosystems and species are capable of autonomous adaptation and where can we aid adaptation by intervention?

Adaptation ought to reduce sensitivity of forest ecosystems towards climate changes. Although forest ecosystems will adapt to climate changes by themselves, given the importance of forests for the society, it is necessary to influence the course and dynamics

of adaptation in certain aspects. In many cases, the society will have to adapt to those changes whose course it cannot alter directly.

Activities related to a process of adaptation of forest ecosystems must be accomplished now, to obtain their full effect in future. Research in forestry must estimate a long-term impact of climate changes and determine how and in which habitats to respond to this threat. A sustainable forest management must include built-in elements of forest ecosystem adaptation [7], emphasising the fact that the inclusion of adaptation to climate changes, as a part of sustainable management of forest ecosystems, does not require large financial investments into an unknown future.

Even without a clearly established dependence between forests and climate changes, it is even now possible to develop the adaptation strategy. Adaptation to climate changes concerns the adjustments in ecological, social and economic systems [11] [12]. Given the lack of understanding of the impact of climate changes on ecosystems, the development of adaptation measures and social context must be highly speculative [3]. However, the applied adaptation measures must not have an adverse effect on the present condition of forest ecosystem, therefore, an effective adaptation policy must provide a response to a broad spectrum of economic, political and ecological circumstances [13] [6] [7] [14].

Adaptation requires:

- establishing objectives for future forests, which will be under the influence of climate changes
- raising awareness of the importance of adaptation to climate changes
- determining a vulnerability level of forest ecosystems and forest communities
- development of present and future cost-effective flexible activities
- forest management aimed at mitigating vulnerability and improving conditions for rehabilitation
- monitoring the state of changes and identification of a critical survival threshold
- a successful impact reduction, shortening of a rehabilitation period and decreasing vulnerability to future climate changes.

The most significant problem of adaptation of forest and scrub communities to climate changes is the rate of change. It is expected that the application of adequate measures in forest ecosystem management could reduce ecological and socio-economic effects of deterioration of forests.

The change of climate characteristics will cause a shift of species areals towards higher altitudes, along with a shift towards the north. Therefore, it is necessary to guide adaptive activities in afforestation towards maintaining genetic variability and resistance of species to adaptation to these changes, as well as towards changing techniques and technology of planting. This involves following activities:

- determining the adaptability of species and genotypes in relevant climate conditions, the boundaries of their transferability, and the development of climate-related characteristics of seed in zones which are to be changed in the course of. Provenances should be tested at the boundaries of their ecological range, with understanding of relevant physiological processes.
- planting of specific genotypes resistant to pests and showing a higher tolerance to climate extremes.
- planting of forest fruit trees. With the change of climate conditions, certain forest fruit trees will disappear from some forest ecosystems. As they represent the basis for a regular functioning of ecosystems, genotypes resistant to changes should be discovered.

- in selection of species and type of planting, forest stands of mixed provenances ought to be established.
- changing the principle of preservation and re-introduction of rare and endangered plant species. Rare and endangered plant species usually have specific ecological needs and low genetic variability. A long-term preservation of certain rare species is easier to accomplish in archives, artificially established stands or arboreta, than in natural stands.
- developing an afforestation technique and technology that will enable survival of seedlings in first years of life in newly-created conditions (mulching, use of polymers, etc).

The existing forests are, for the time being, resistant to climate variability, but their regeneration represents a phase that is very uncertain under the impact of climate changes. Spreading of genotypes or species adapted to new climate conditions should be enabled by their adaptation to climate changes. Spreading of non-commercial trees and vegetation will present a particular economic problem. Adaptive activities in the field of forest regeneration involve:

- identification of genotypes tolerant to drought.
- aiding migration of commercial tree species from their present to future habitats by means of artificial regeneration. Shift of species towards the north or higher altitudes may be hindered by inadequate soil conditions, such as lack of nutrient matter, the depth, deficiency of mycorrhizal fungi, etc.
- plantation of provenances able to thrive in a broader spectrum of conditions as compared to current habitat provenances.
- control of undesired plant species, which become competitive species under changed climate conditions.

In near future, climate changes may increase productivity of forests. However, in long-term, the availability of nutrient matter and adaptation of tree species to a higher content of carbon dioxide may limit productivity. In warmer habitats, stabilisation of productivity at the present level can be expected. Changes may also be expected in forest distribution border areas in the zone of scrub and grass habitats. The above-mentioned changes in forest ecosystems demand an essential change of positions and procedures in the field of forest silviculture. Adaptive activities aimed at responding to changes are the following:

- non-commercial thinning or selective removal of individually suppressed, damaged or trees of poor quality, aimed at increasing the light, water regime and nutrient matter, which would make them more accessible to remaining trees. This adaptive measure, however, if applied on larger areas may have an impact on a current regular functioning of ecosystem.
- reducing endangerment, aimed at decreasing future disturbances, by controlling a stand thickness, type and structure of forest (for instance, supplemental planting, planting of species from subsequent successive phases, etc).
- planting of other species or genotypes, in cases when natural regeneration is not acceptable from the perspective of future forest ecosystems
- a decrease of rotation period and plantation of adaptive species aimed at more rapid establishment of resistant forest ecosystems.

Natural protected areas present a specific problem, where the adaptive measures involve the following activities:

- reconsidering our current positions and approaches to protection of natural protected areas (by postponement, improvement, direct change).

- identification and plantation of alternative tree species.
- preservation of biodiversity and maintaining of a diverse and dynamic terrain, whose function is to aid vegetation and migration of wild animals through ecological corridors during climate changes.
- Minimising fragmentation of habitats and maintaining association of habitats into functional units on larger areas.

Rapid changes in forest age structure and changes of terrains can be caused by more frequent and intensive disturbances such as fire, stormy winds and outbreak of pests. There is a high possibility of occurrence of interaction between climate changes (warmer and drier climate), pest outbreak and forest fires.

Adaptive activities must deal with changes in the forest fire regime, and include the following:

- focus on protection of regions of high economic and social value.
- change of a forest structure (distance between trees, stand thickness, removal of dry upright trees, removal of dead trees) aimed at decreasing the risk and the degree of ecosystem disturbance. In the process of reduction and removal of dry trees, it should taken into consideration that this material has a particular ecological importance for functioning and preservation of ecosystems, therefore it is necessary to reconcile a threat of fire with the ecological component.
- development of a 'smart' fire landscape. By means of cut, regeneration and stand activities, used as systems for management of the amount of combustible material in the process of control of fire occurrence and spreading. For instance, an aspen stand, a species resistant to fire, can be planted in several localities in coniferous cultures or in natural forests, with the aim of mitigating vulnerability of ecosystems to large fires. This is an example of an adaptive activity, whose positive impact would be felt for several decades.
- increase of a rate of recovery of forest ecosystems after fires.

Climate changes will increase the warmth and humidity in present forest ecosystems, create conditions for increased occurrence of insects and diseases. Adaptive activities in protection of forests against insects and diseases may involve:

- partial cut or thinning aimed at increasing the stability and lowering sensitivity to attacks.
- sanitation cut of infected trees, where it should be taken into consideration that this practice may increase the sensitivity of ecosystems to other pests.
- shortening of a rotation period with a view to decreasing the period of vulnerability of a stand to harmful insects and diseases, aimed at effecting a more rapid transition to more suitable species.
- use of insecticides and fungicides in situations where other activities are ineffective or inappropriate.
- use of genotypes grown for the purpose of increasing resistance to pests.

Biological and climate changes will also have implications on use of forests and forest ecosystems. An increased amount of precipitation during winter and a decrease in the summer period may have an impact on water resources in forest ecosystems, increase the risk from erosive processes and endanger fish habitats and hatcheries. Adaptive activities in the field of use of forest ecosystem resources are the following:

- an increased amount of wood from sanitation cuts, carried out after fires or stand damage inflicted by insects, along with a reduction of treatment in natural stands abandoned to natural adaptation.

- maintenance and rehabilitation of roads, damaged as a result of erosive processes due to an increased amount of precipitation and abrupt snow melt
- mitigation of the impact on infrastructure, fishery and reserves of potable water
- inclusion of adaptive planning measures into forest certification, as a part of the risk management strategy
- mitigation of climate changes through carbon management.
- an increased use of biomass as an energy generating product
- development of policy aimed at facilitating creation and implementation of an adaptive response to climate changes.

9 CONCLUSION

Climate change and environmental security are becoming a general security problem because they cause open conflicts, have the potential to destabilize a regime and may lead to population migrations, or even to the disintegration of a state. The issue of environmental security is a global, but also regional and national issue. Its solution depends on the political, social, cultural, religious, economic, and every other kind of support and cooperation, and requires a higher level of environmental responsibility. At the national and global level, we must develop mechanisms for mutual action with the aim of reducing the uncertainty caused by environmental threats. One way to reduce the impact of climate change on forest ecosystems is the timely implementation of a whole range of adaptive measures to mitigate the changes and thus reduce security threats at the national and regional level.

Only a multi-disciplinary approach to addressing these problems enables arriving at a realistic and applicable solution.

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THE ROLE OF THE MILITARY AND POLICE IN CRISIS MANAGEMENT

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Abstract: The concept of crisis management is a set of special measures taken under pressure to resolve the problems caused by the crisis. Crisis means unstable situation in the political, social or economic affairs, a sudden or decisive change. This system should eliminate or prevent the successful transformation of the crisis in an open armed violence / war. This concept occupies an important place in the new strategic concept of security and defense of NATO. According to Alliance, crises and conflicts can cause a direct threat to the security of the territory and population. Therefore requires commitment from the appropriate combination of police-military, civilian and political instruments to assist in managing a crisis, to stabilize post-conflict situations and to support reconstruction.

The systems for national security in all modern states, in general, rely apart from the army and the police who have their place, role and tasks in maintaining peace and security on internal and external plan. As a result of the increased powers and responsibilities, institutions in the security sector objectively seek better cooperation, effectiveness, democratic supervision and control. The human and financial resources invested in the security sector require more efficient use of facilities. This increases the need for coordination among security institutions based on explicitly formulated strategy followed by coherent and responsible actions regarding the management circles and society in general.

Based on the management of crisis there is a possibility police to take certain measures and activities in cooperation with the army to deal with crisis situations. So, in a crisis situation when it is threatened the security of the state and state bodies have adequate resources and means for its prevention and management, part of the army participated in support of police and other bodies of state administration involved in this process. The police have a major role in the performance of security functions in the country.

Police and the army as participants in the system for crisis management, should provide early warning of potential threats and mutually supportive capabilities of parts of the police, army and civilian government. It should be clearly stipulated the facilities and forces and how they participate in light of the risks and dangers of Homeland Security (support to the police and the civil authorities by the army) and in support of external security (support in the mutual efforts of the international community).

The paper defines how army can provide support to the police in dealing with threats to the security of the Republic, which exceed the capabilities and police facilities. In addition, it is also being explored the manifestation of the support to the police in the intelligence sharing, border security, fight terrorism, execution of security actions over important facilities for defense and security, dealing with asymmetric threats (international terrorism and organized crime, illegal migration and drug trafficking, people, weapons and computer crime).

The lack of coordination between the police and army can lead to a number of negative effects in the process of planning and implementation of activities related to security and defense of the country, and thus in the process of making key decisions. There should be a clear division of the army from the police and police should be the main instrument for maintaining order and peace, not military. police should have missions that are fundamentally oriented to serve the citizens. There must be a civilian, not military police training in orientation and practice.

Keywords: crisis management, police, army, crisis support, joint force

1. INTRODUCTION

In the scientific vocabulary, raising the issue of crisis in the context of post-conflict societies or pro-conflict societies is key issue that requires diagnosis and removal of the causes of the crisis. According to some opinions, it is the way in which international organizations and institutions (only those who have a mechanism for resolving the causes of crisis) and of course the national authorities, to which the crisis was a direct threat, simultaneously remove, or attempt to remove root causes of previous or potential for possible future crisis.

But, at this time, the views of international organizations or donors and the views of "local" actors on a number of issues of post-conflict agenda vary. It would be logical to expect that, at best, local / national authorities can take responsibility for successful implementation of the strategy to stabilize or, at worst it can become impossible option due to various reasons.

In the past, Republic of Macedonia had the opportunity from firsthand to perceive the nature of asymmetric threats and face the consequences of lack of coordination of national security institutions and services.

Experience tells us that contemporary risks and threats act between department's competencies, exceeding the resources and capabilities of separate government departments and go beyond the boundaries of individual states. These threats do not concern only security and defense policy, but also policies in the domain of other resources: foreign, social and economic policy, Healthcare and environmental protection policy. Creating security system able to cope with these challenges and support the overall policy involves efficient coordination of all departments at the highest level.

Creating crisis management system that can promptly and effectively deal with risks and threats of the modern world means building security system that will be capable at the same time to: protect the interests of the citizens, to create conditions for sustainable development and implement state policies. The establishment of this mechanism involving police, military and other new security institutions, will provide central monitoring and assessment of threats and risks and data analysis, effective civilian control of the security system in crisis situations at the highest political level and coordinate the activities of system institutions and security services.

Based on the management of crisis there is a possibility police to undertake certain measures and activities in cooperation with the Army to deal with crisis situations. Therefore, in crisis situation when the security of the state is threatened and state bodies do not have adequate resources and means for its prevention and management, part of the Army participates into support of the police and other bodies of state administration involved in this process. The police have a major role in the performance of the security functions in the country.

Police and the Army as participants in the system for crisis management, should provide early warning of potential threats and mutually supportive capabilities of parts of the police, army and civilian government. It should be clearly stipulated which facilities and forces, and how they participate in interception of the risks and dangers of Homeland Security (support of the police and civil authorities from the army) and in support of external security (support in the mutual efforts of the international community).

Military force was traditionally a symbol and defender of the territorial integrity and sovereignty of the state. These categories undergo profound changes that have not yet been reformed in the armies of in most of the countries. The classic function of the

military power, defense of territory and sovereignty also undergoes fundamental changes, because understanding of sovereignty is changing as well and external threats against the territorial integrity of states become greatly impossible.

Armed Forces of Republic of Macedonia, as part of a broader national security system, it's natural to adapt to the modern understanding of the risk, challenges, threats to peace, security and stability of Republic of Macedonia. It is necessary to build and develop modern armed forces that meet the needs and opportunities of Republic of Macedonia and which, according the new concept cooperate with the police, i.e. with its function. That means building defense capability in peacetime, further, building and developing new capabilities to support homeland security, as well support of the civilian institutions.

2. COORDINATION BETWEEN THE PRESIDENT AND GOVERNMENT

Modes of engaging the Army of republic of Macedonia, and thus the jurisdiction of the President of the country for Army's participation is normatively regulated by the Law on Crisis Management of the Republic of Macedonia, where it was determined that "Part of the Army participates in supporting the police in terms when the crisis has threatened the security of the Republic, the state administration bodies don't have adequate resources and means for its prevention and management. Proposal to the Government on the need for participation on the part of the Army, according to the Strategic Defense Review of the Republic is given by the Managing Committee.

The proposal on the need for participation on the part of the Army, in particular contain: the type and number of forces and equipment of the army unit, purpose and tasks required and the activity and the engagement of the army unit. Firstly, the proposal to the Government for the duration of participation on the part of the Army for support to the police in dealing with a certain crisis, is submitted by the Managing Committee, based on the Strategic defense review missions are referred where you can engage the Army, such as : the support of citizens in protection against risks and hazards, including the ability to assist in events of civilian intervention (natural and other disasters, technological disasters, epidemics, etc.), helping and dealing with threats, risks and dangers arised from the problems of global security that appear as terrorism, international crime, all kinds of illicit trade and border security and unconventional and asymmetrical threats.

In this context I point out that by raising of the proposal for the need of participation of the army in dealing with crisis, the government does not prejudice at any point the interference the president of the Republic as supreme commander of the Army. Because, if conditions for participation on the part of the Army in dealing with crisis are met, is decided by the President of the Republic, by evaluating the type of crisis in each specific case.

On the proposal of the Government, the President decides for participation on the part of the Army in dealing with crisis. The President may at any time to reevaluate the need for participation on the part of the Army. The manner of participation of the Army in a crisis situation is governed by regulations issued by the President.

From this set of relations, it follows that the role of President of the Republic as a separate and independent executive authority and supreme commander of the Army, has not been downgraded on the government. Also, dealing with crises is right and duty of all state administration bodies, bodies of state power, force protection and rescue

authorities of municipalities and the City, so in that sense and the Army of the Republic of Macedonia. Also, the submission of the report by the Government to the President of the Republic is aimed at ensuring their coordination on issues on which they reach their responsibilities in implementing executive authority in the area of crisis management. This is especially taking into account the right of the Government to request the authorization of the Republic's president to authorize the participation of the Army to support the police in dealing with a crisis situation. Such authorization the president as supreme commander of the Army could not be realized without full awareness of the President of the Republic for activities related to crisis management.

Based on the above noted, we can conclude that the in the law its clearly established the responsibilities of the Government and the President of the Republic in the field of crisis management, with the determined commitment of the Government for submission of report to the President of the Republic for activities associated with managing Crisis has basis in Article of the Constitution of the Republic.

3. ARMED FORCES AND CRISIS MANAGEMENT

Lack of coordination between the police and the army can lead to a number of negative effects in the process of planning and implementation of activities related to security and defense of the country, and thus in the process of making key decisions.

Such experience occurred in 2001, in Macedonia, when coordinated response in the political and security crisis and was left out by the security forces, police and military. The problem appeared in several different forms. From one side it came out as inefficient command with the armed forces so that the ratio of the President, the Defense Minister and the Chief of Staff in the chain of command and management was practically confusing. On the other hand the problem went out as a vague relationship between the key security institutions and the military police and the division of responsibilities between them. These problems have created a bad impression of a crisis simulation involving actors, but, unfortunately, with specific sacrifices and consequences.

Today in the missions of the Army's stated support of the police forces in dealing with threats, risks and hazards to the security of the Republic, which exceed their capabilities and capacities? Army interaction with the MOI through the following subtasks: Performing special operations, intelligence sharing, search and rescue, closing of routes, Aerospace Support (landing, transport), engineering support. It is planned by the Army for police forces to use: mobile infantry forces, Special Task Force, Air Force helicopter combat support and aviation transportation (medical evacuation, search and rescue), support for military forces, forces for electronic reconnaissance, team unexploded lethal devices, engineer forces, forces ABHO.

Coordination in decision-making, guidelines, measures, activities in operations involving forces from the army, police performed while commanding the army units involved in operations, is under the formal command structures / commanders. Preparation, training and exercises on the possible participation of the army and its parts, in support of the police in crisis situations and humanitarian emergencies is realized on the basis of developed operating procedures for operation and coordination in the execution in which involved authorities from the General Staff of Army commands and units participate. The implication of tasks to the ARM arising from the Law on Crisis Management on the development of military capabilities in terms of supporting the police in dealing with

threats, risks and hazards to the security of the Republic, which exceed their capabilities and capacities are given through:

- Supporting the police with intelligence information;
- Supporting the police with the resources and capabilities that exceed their capabilities and capacities;
- Supporting the police in border security;
- Supporting the police in combating terrorism;
- Supporting the police in carrying out actions to provide facilities of importance to the defense;
- Supporting the police in dealing with asymmetric threats:

Required skills and capacity to implement the task:

- Collecting, processing and analysis of intelligence data;
- Surveillance, search and rescue;
- Mobile forces trained to assist in border security;
- Mobile forces trained to support the fight against terrorism;
- Support for police and other security actions;
- Support in dealing with asymmetric threats (international terrorism and organized crime, illegal migration and drug trafficking, people and computer crime).

4. SURVEY OF PUBLIC OPINION

To see what is the opinion of the concept of support from military police, research of public opinion has been done by the Macedonian Center for Peace and Euro-Atlantic integration in 2010. The 1,200 respondents (civilians, military officers, professional soldiers, uniformed police officers) were asked the following question: Do you support the concept of supporting the army to the police? Most respondents (72.1%) support this concept, while (13.7%) responded negatively, while only (14.2%) have thought about this topic.

The increased powers and responsibilities of institutions in the security sector objectively seek better cooperation, effective, democratic supervision and control. Human and financial resources invested in the security sector requires more efficient use of facilities created. This increases the need for coordination between institutions in the security sector based on explicitly formulated strategy followed by coherent and responsible actions regarding the management circles and society in general.

The process of coordination between the army and police and state administration bodies is very important variable. The Coordination for its basic purpose holds the of alignment of more components and factors in a pre-conceived action. The results expected depend largely by the the degree of coordination, results which are imposed as an imperative by security institutions and authorities. The coordination between the army and police enables more efficient to realize the goals and reduces the risk that would be encountered in dealing with a particular situation. The coordination is especially important to keep constant communication with all authorities who have contiguous points in security and defense of the country.

The data showed that 515 (42.9%) respondents reported that there is cooperation and coordination; 457 (38.1%) of respondents believe that there is coordination, i.e. 228 (19%) do not hold attitude regarding the issue. Lack of coordination between police and the army could lead to a number of negative effects in the process of planning and

implementation of activities related to security and defense, and thus in the process of making key decisions. This is especially important question given the fact that the new solution on border security, this commitment is fully implemented by the police and in such circumstances the Ministry of Defense and Ministry of Interior had a task to cooperate.

The establishment of civilian crisis management which will ensure civilian and democratic control over the activities and strengths will achieve coordination and efficiency of the system may sound too ambitious, but it is a general purpose, first to stop, and the other is to limit and resolve crises.

5. REGIONAL CRISIS MANAGEMENT OF SOUTHEASTERN EUROPE

Only in the last few years managing the crisis is a priority topic of the security agendas of international, governmental and nongovernmental organizations. The international management of crises, in particular, faced with threats that require much faster and more coordinated response and strategy for managing crises. Engagement in the prevention, management and post-conflict peace-building by international organizations, governmental and individual NGOs opened field of questions for which there are few relevant answers (lessons learned). This is one of the reasons why each answer is under the sign of question mark: would it be more successful than the previous?

Stated weaknesses impose the urge for taking concrete steps and new initiatives to build a fully operational system for regional security and crisis management. Namely, the challenge is that, the existing political will and mutual understanding can be used to build cooperative capacity to deal with crises of various kinds, in conditions of limited financial resources. In addition, funds and equipment can remain in possession of the states, but to be "declared" and well prepared, and constantly available to deal with crises in the region of Southeast Europe.

It is considered the governments of the region to launch an initiative for Co-operative crisis management in South Eastern Europe, which would mean implementation of the Strategy for the development of capacities for crisis management in the region. The adoption and acceptance of the strategy mentioned by all countries in the region would serve to identify priorities utilization of available national funds, and funds allocated for this purpose by international organizations.

The initiative should imply supporting cooperation between the countries of Southeast Europe to prevent and deal with risks and threats in cases of: organized crime, money laundering, illegal arms trafficking, suspension of corruption and the financing of terrorist and illegal armed activities, illegal transfer of conventional weapons, illegal migration, corruption and others.

6. EXPERIENCES FROM SWEDEN

Regarding the experience of the organization and operation of crisis management in the text will analytically cover several countries. Sweden is probably not the primary target of terrorism, although the threat still exists and must be taken seriously. Potential targets may be, for example, foreign institutions such as embassies and multinational companies.

Also Swedish institutions can become targets as a result of the Swedish engagement in support of peacekeeping operations. Analysis of Article 51 of the Charter of the United Nations resolutions 1368 and 1373 by the Security Council, gives the right terrorist attacks to be seen, or this kind of threats, as valid motive for the state to practice the right of self defense.

If a situation occurs, when there is no time to obtain approval from the Government of Sweden, to give opposition to direct threat, the armed forces should be empowered to act independently and support the police. Also, for other types of violence at sea or air (hijacking of aircraft or ships) when police do not hold additional resources to deal with the situation, the armed forces should be a means which can be used if the police ask for help.

As for the fight with "regular crimes" police Sweden may request assistance from the armed forces when it comes to special equipment, transport etc... But in such cases the use of force should be the prerogative of the police. Although the armed forces have a role in the fight against terrorism guiding principle should be: the armed forces should fight, but the responsibility is the responsibility of the police. The task of the police is to prevent and fight crime. Besides, the police is enabled with strengthening of specialists from ABHO threats. While civilian facilities are secured by the armed forces, they should have the rights as police.

7. EXPERIENCES FROM HUNGARY

In connection with the armed forces and police, the Constitution of the Republic of Hungary provides in case of armed actions, which goal is to change the constitutional order or in cases of blatant acts of violence made by use of weapons during an emergency, the army can be used, if the use of police is not enough.

National Directorate General for dealing with disasters is directly subordinate to the Ministry of internal Affairs of Hungary who have close contacts with the ministries of defense, economy, transport, information technologies and communications, Health). In all these cases parliamentary control is significant.

8. MACEDONIAN CONCEPT CRISIS MANAGEMENT

For the realization of the concept of crisis management, according to Marina Mitrovska crisis management expert and professor at the University of St. Cyril and Methodius "Skopje undoubtedly requires range of assumptions, among which the most important are:

- Development of an efficient organization system for crisis management;
- Providing legal and other requirements by the state to establish a crisis management system compatible with international standards;
- Permanent and mandatory staff training to work in this system.

A view from our experiences shows that:

- extensive preparation is required, equipping, training and planning of all institutions of the system to accept the challenges that bring conflict and crisis, because the development of predictable crises is difficult;

- Need to build a system of complete transparency between all institutions involved in resolving the crisis, putting into operation of the available infrastructure and national resources;
 - Even in peacetime it should be fully regulated- the status of citizens as a consequence of the crisis for political, economic, social, demographic, ethnic or religious motives will become subject to forced migration;
 - The role of the institutions of the international community must be more efficient, timely and complete if you want the consequences of crises to be bearable boundaries;
 - Role in resolving the crisis and the consequences for the countries participating in the process must advance to be understood, supported and financially compensated by the international community;
 - Issue of national security of all countries participating in resolving the crisis must be a priority and supported by the international community;
 - Experience shows that the regional approach in overcoming the crisis, regional contingents and regional coordination are key to exit from the crisis zones;
 - Coordination of activities and the planning of NATO, the EU and the OSCE has proved necessary to exit the crisis zone.
- Hence, a question arises if this system for crisis management will be able to adequately respond to new security threats? What action will be taken and what resources will be used? The first dilemma is always the hardest when you have to choose between the political and security assets. If analysis shows that the situation can be stopped by political means, then it is better to be done, especially bearing in mind that we live in a region of tension that are sometimes irrational, religious and ethnic colored and they can always be solved by deployment of security forces.
- Hence, the positive side of the concept of crisis management is the fact that it starts from the conception to the provisions of the National Security and Defense, which, among other things, provides guidelines to regulate the area related to security and defense of the citizens, their property values and the state. Also, in one part of the contents of the Law on Crisis Management there are standardized solutions from some member states of NATO and the European Union.

9. CONCLUSION

Construction of synchronized security system in the Republic of Macedonia, integrated in the collective security systems is a strategic investment not only in the state security and stability, but also the security of Euro-Atlantic region. It is in the interest of NATO and the EU, but also collective contribution toward the Euro-Atlantic security. The crisis management system, ie for safety should hold clear division of the Army Police and police, should be the main instrument in maintaining peace and order, not the military. Police should have missions that are fundamentally oriented to serve the citizens. There must be a civilian, not military orientation in the police training and practice. The structure of the system for crisis management is one of the key steps in the

process of adjustment of domestic regulations in safety and security system of the Republic of Macedonia to standards of the member states of NATO.

Improving inter-ministerial coordination is crucial issue not only for membership aspirants, but it is also the key challenge for the existing members of the Alliance. The establishment of civilian crisis management which will ensure the civilian and democratic control over the activities and strengths to achieve coordination and efficiency of the system may sound too ambitious, but it is a general purpose, first to stop, and the other is to limit and resolve crises.

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RISK ASSESSMENT OF TECHNICAL - TECHNOLOGICAL ACCIDENTS AND TERRORIST ATTACKS IN THE REPUBLIC OF SERBIA

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Abstract: Many emergency situations that have recently affected Serbia emerged as a result of both technological and natural disasters, as well as terrorist attacks and many other serious incidents. These incidents have also made us think about the importance of efficient management in emergency situations in order to save lives, diminish negative consequences and make sure there is a minimum of basic social functioning. The risk management process should be seen as an integral function of security management at both the state and large economic system level, but also in smaller organizations which face different kinds of natural and technological risks that affect the security of people and their property.

Key words: technological risk, emergency management, risk assessment

1. INTRODUCTION

In the process of realization of security functions a country faces various threats. Among the most and characteristic ones are technical and technological accidents and terrorist attacks, which are declared as emergencies. Their significance is even greater due to their implications on different groups of people, random place or time of occurrence, extremely complex circumstances, and potential vast and long-term consequences of different character. In order to timely consider these hazards, the government takes various preventive measures, thus creating conditions for the prevention and effective response in case of realization of these risks. Prevention is the basis for mitigation of risk of technical and technological incidents and terrorist attacks.

In contemporary practice, risk management is one of the ways for the realization of prevention in the security function. As a complex function of security management, aimed at the locating the critical points of the system and finding of appropriate strategies for the prevention or minimize the risk, risk management creates a strategic advantage over the sources and causes of risk.

A precondition for efficient risk management is the existence clear and defined procedures aimed at proactive and timely elimination of possible sources threat to or hazards. Clearly defined procedures that can be applied in the event that the threat has already happened are also necessary. To assess vulnerability of the organization, identify possible hazards, sources and forms of threat, to establish their possible effects and consequences, to consider forces and resources, and on that basis take preventive measures to prevent or reduce the probability of negative events as well as to reduce the consequences, it is the basis for successful functioning of state and organizations, with the aim of protecting the human life and health, property, material and cultural resources and environment.

Emergency situations represent an important area for the enforcement functions of state security. Their importance reflects in the fact that they are very frequent and leave

serious consequences. On the other hand, technical and technological accidents and terrorist attacks have a different context as they represent emergency situations that rarely occur but have serious consequences. The existing organizational framework for conducting protection and rescue activities in emergency situations in the Republic of Serbia, which includes system authorities and units, together with already planned and organized system measures for protection and rescue, is regulated by the Law on emergency situations, adopted in 2009.

The Law harmonizes the system of organization and functioning with vulnerability assessment and the real needs of protection and rescue of population and property in emergency situations. In 2012, Guidelines on the methodology for the development of risk assessment and plans for protection and rescue in emergency situations (Official Gazette of RS, No. 96/2012 of 5 October 2012.) was adopted. Its implementation is realized through the application of the Law on emergency situations. Guidelines define the methodology of risk assessment of natural and other disasters and plans for protection and rescue in emergency situations. This way, the Republic of Serbia provides the unique system of protection and rescue in accordance with this Law and other legal REGULATIONS, AS WELL AS PROGRAMS, PLANS AND OTHER DOCUMENTS RELATED TO THE PROTECTION AND rescue activities.

2. RISK MANAGEMENT OF EMERGENCY SITUATIONS

In the past, response to emergency situations mostly related to warning and providing assistance during or after the emergency situation, but today it tends to be a timely, coordinated and effective activity which involves all members of the community achieves a greater impact on preventing or minimizing consequences of emergency situations. In order to eliminate, control or minimize causes and potential effects of emergency situations, emergency situations must be managed. Risk management is the most important instrument of emergency management. Emergency situation occurs unexpectedly and puts individuals, power and society actors in the complex operative conditions. If risks are not anticipated and if those risks are not adequately managed emergency situations appear. If the organization does not have clearly defined procedures, crisis situation can turn into a catastrophe with unpredictable consequences. Risk management in emergency situations today emphasizes prevention and social protection of population and property from the destructive force of natural and anthropogenic disasters, through a comprehensive program or risk reduction, preparedness, response and recovery.

In the most general terms, risk management is the part of proactive management in emergency situations. Depending on the standpoint, the matter can be seen in that way that emergency management is the part of the organizational risk management system. It is often said that risk management is the management of uncertainties. At the other extreme are the certainties and activities of the current management and in the middle are the risks. As one goes from certainty towards uncertainty the potential risks grow. If we do not manage uncertainties they will manage us and take us to the field of emergency management first, and then disaster management.

The complexity of these situations requires a strategic approach, which should provide:

- identification of potential emergency situations - the identification of all potential risks, making the necessary situational map, or study all possible causes of emergency situations;
 - prediction of emergency situations development - modeling the dynamics of their development and assessment of resources (material, financial, operating and other) required for the elimination of emergency situations and assessment of all the resources needed for the care of affected populations;
- preparation and analysis of the strategies for eliminating emergency situations and its consequences – division of the territory into areas and supply zones, choosing the responsible persons, determining the number of operational teams and their deployment, the organization closed zones and patrol area, organizing evacuation (complete or partial), depending on the scale of operations in the situation;
- planning and operational management in the organization of certain activities, identifying priorities and their implementation;
- rescue, rehabilitation, and other urgent activities - refers primarily to activities related to notification and reporting, providing assistance and a range of other measures to eliminate and mitigate the effects caused by the emergency situation.

Risk management in emergency situations is not a synonym for protection and rescue, or for insurance against natural and other disasters or for civil defense, as it covers much broader social reality which exists as a theoretical concept in science and research, but, unfortunately, not so present in the real world. In order that this theoretical concept is accepted and successfully implemented in practice, it is necessary to secure greater involvement of the entire community. First of all, social consensus needs to be achieved, which involves the integration of disaster risk reduction into development programs and plans, provision of resources (human and a financial) necessary for implementation of these plans and programs and the establishment of an integrated protection and rescue system. Effective disaster risk reduction, and also the process of risk management require a strong institutional basis for ensuring further capacity building, improvement and development of appropriate systems, development programs and legislative solutions, facilitating the flow of information and providing effective mechanisms of dialogue and coordination.

Risk management in emergency situations can be defined as a set of functions or processes that aim to identify risks, predict and investigate possible emergency situations and establish specific models that may enable the organization to prevent it or to overcome it by reducing its consequences and a quick return to normal functioning.

3. RISK ASSESSMENT PROCESS

Risk assessment should determine a level of security and protection of the resources of the organization, the state and the entire society. It is the most complex segment of risk management, which needs to be integrated into all organizational processes and activities and on the other hand, it requires an adequate communication and commitment of all the people and all levels of management and employees and the entire community at all stages of risk assessment. Risk assessment, in the narrowest meaning, is a comprehensive process of identifying potential hazards, analysis and risk evaluation.

Risk identification is the process of finding, identifying and describing risk. It is a checking or screening exercise which serves as a preliminary step before the upcoming

phase of risk analysis. The ultimate aim of risk identification is the recognition of the risk and determining the degree of impact or seriousness of the consequences for the assets. Risk analysis is a process that reveals the nature of risk and determines the level of risk. For the purpose of finding out the details related to the cause and consequences of potential risks, a detailed risk analysis is performed in order to determine the level of risk that represents a product of the probability and the consequences level. The probability represents a combination the frequency of certain adverse events and vulnerabilities in relation to the potential hazard. The consequences represent the effect of adverse events to the assets, and it is manifested by the size of the loss (damage) in relation to the criticality of the protected value. Risk assessment is the process of comparing the results of the risk analysis with risk criteria to determine if the risk and its strength are acceptable or could be tolerated. Based on the list of acceptable and unacceptable risk a list of priorities is defined, those risks that have the highest level will have the priority treatment. When determining which risks will have priority, it is necessary to consider the possibility of risk with low risk and the possibility of applying measures of treating escalates into high risks with the need for priority treatment.

The existence of residual risks or risks that even after taking measures for treatment and remains unacceptable is determined after completion of the risk assessment. Each residual risk that remains after implementation of risk treatment is again evaluated and goes through the assessment process in order to implement adequate measures for treatment. After the implementation and verification of measures for the treatment of individual risks, a decision should be made whether the overall residual risk is acceptable, using the criteria for assessing the acceptability of the risk.

4. ASSESSMENT OF TECHNICAL AND TECHNOLOGICAL RISKS AND RISK OF TERRORIST ATTACKS

In recent decades, the development of human civilization is marked by the emergence of new security challenges, risks and threats. In modern conditions the risk of technical and technological disasters is growing both in terms of possibilities and probabilities of occurrence and in terms of the volume of negative consequences and extent of possible damage, regardless of implemented preventive measures. The increase in the number of armed forces and groups, terrorist attacks and the development of terrorism have caused the terms "terrorism" and "catastrophe" to be regarded as synonymous, especially if one takes into account the possibility of terrorist use of weapons for mass destruction.

In the 21st century there is an increased probability of technological terrorism that involves the commission of terrorist attacks on companies and the emergence of accidents with the aim of causing human and material losses and environmental degradation.

4.1. Characteristics of technical and technological accidents as the cause of emergency situations

According to the International Labour Organisation, the incidence of big technical and technological accidents in the last 40 years has increased considerably. On the global scale, according to the UN data, from 1970 to 1985 about 200.000 accidents occurred in industrial enterprises and from 1985 to 1995, more than 180.000. The results of research

on a sample of 5 thousand industrial accidents have shown that 90-95% of the total occurred in industrialized countries. Some of the factors influencing the growth tendency of technical and technological accidents are: a general increase in the volume of industrial production; growth in the number of companies with high level of concentration of production (especially an increase in the concentration of energy resources whose holders are new materials, aggregates and systems); increasing interdependence of the different production activities; high speed production processes (reduced time for putting the production in function, strong competition and other causes result with inappropriate implementation of protection and safety regulations in the workplace); the complex design of industrial complexes (involvement of a large number of organizations contributes to the "dilution" of specific responsibility for the safety of the entire complex), increased role of human factors (lack of knowledge, carelessness and incompetence of the people for the use of tools and machinery) as well as outdated and dilapidated technology

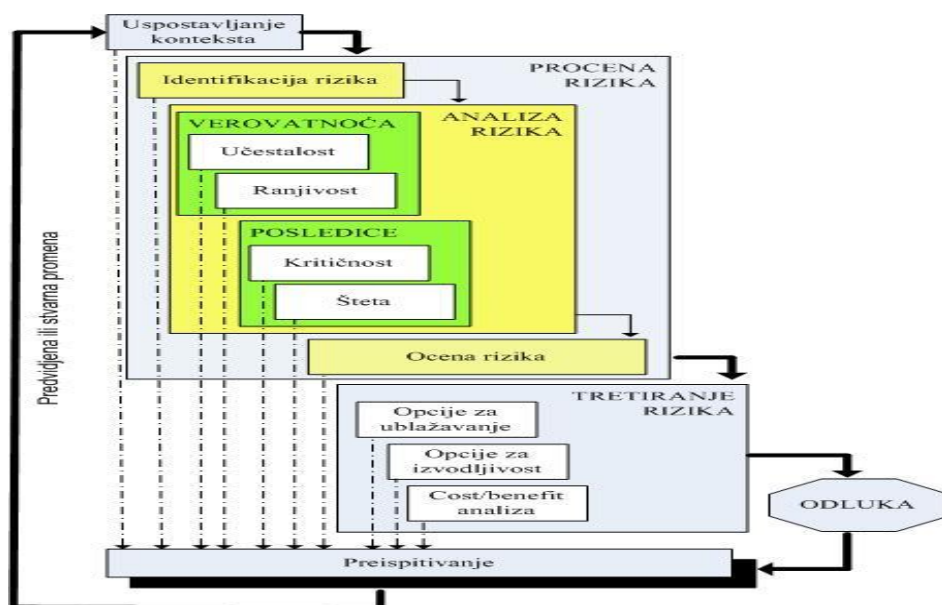


Fig.1. Risk assessment process

Source: Standard SRPS A.L2.003 2010, Social security-risk assessment to protect persons, property and business

Based on the available data from different sources it has been estimated that in the period from 1996 to 2004 in the Republic of Serbia there were about 100 technological accidents, whilst in the following years occurred about 20 smaller ones per year. The highest number of accidents occurred on the territory of Belgrade, Pancevo, Krusevac, Loznica, Sabac, Novi Sad and Prahovo. About 30 to 50% of chemical accidents occurred during railway and road transport of dangerous goods, often in highly populated urban areas. The most serious chemical accidents recorded in the Republic of Serbia have occurred during the bombardment of the petro-chemical industry, petroleum products

storage facilities, power plants and substations in 1999. The territory of the Republic of Serbia has been periodically threatened by the potential cross border effects of chemical and nuclear accident in neighboring countries Romania, Hungary, Croatia and Bosnia and Herzegovina.

Technical and technological hazards arise as unexpected and uncontrollable events during the management process of certain assets and activities with hazardous substances with a fire, explosion, spillage, evaporation or terrorist activity. Depending on the type, quantity and the maximum concentration of hazardous substances, as well as the distance from the industrial facilities and populated areas, and the distance of these plants and facilities that carry out professional activities related to hazardous materials, the emergence of technical and technological accidents is possible with the possibility of growing into a big accident or disaster whose consequences may jeopardize human lives and health, the environment, surrounding facilities (economy), transport network, and critical infrastructure facilities.

As a form of threat to humans, property and the environment technical and technological accidents possess certain common characteristics regardless of the space and time in which they occur and the level of industrial and social development of specific environments. In addition to unpleasant surprises, in many cases they showed the unreadiness of the human factor in confronting these dangers, because the signing for duty is delayed, there is a lack of necessary information and relevant experts, whilst the special assistance remains beyond the capabilities in terms of personnel, facilities, equipment and organization. The most dangerous substances and their secondary compounds that may arise, given the unpredictability of the weather, the type and their mutual reaction are conditioned by the insufficient knowledge of the possible consequences. Possibility of an accident and the fact that it can cross state borders and affect a larger group of people makes timely implementation of protection measures difficult. Each delay, inadequate preparation, lack of knowledge or lack of adequately trained and equipped teams and procedures as well as responses of intervention increases territorial vulnerability and damage. Quite often specialized agencies responsible for responding to the accident did not react timely in order to prevent the consequences and did not possess previously prepared plans, organization and competence.

The necessity of careful planning is conditioned by the application of specific procedures in the reaction (response) phase from the time of occurrence of an accident to recovery. Therefore it is very important to pay attention to prevention. All the assessments should go into detail and all necessary measures should be taken to prevent an accident, then a system for the first response to the accident and emergency response, quick warning, assistance, coordinated responses should be create, standards and mechanisms of the response to the accident harmonized, in case the accident still occurs. For all the technical and technological accidents psychological and social factors are important. They are reflected in the preparedness of workers i.e. process staff at a psychological level and maintenance of the physical ability to work. Adequate training and continuous education of employees, compliance procedures, adequate protection as well as good financial status of workers who work with hazardous materials and in critical areas are an essential prerequisite for accident prevention.

One of the ways for better resolving problems of organization and implementation of protection measures in order to prevent serious technological accidents is to define the sources of threat. The most common sources of threat are:

- industrial plants, manufacturing and other facilities in which dangerous substances are produced or used
- industrial warehouses and other storages of dangerous materials
- means and ways for the transport of dangerous materials
- landfill disposal which have the properties of dangerous materials.

4.2. Terrorist attacks as a cause of emergency situations

Examples of the terrorist attacks in the United States, England, Japan, Spain, Indonesia and Russia indicate that even large systems thoroughly prepared for confrontation with the consequences of terrorist acts are not immune to failures in the operation, often conditioned by the factors of surprise and shock. For a society like Serbia, which is only establishing the base of the unique emergency response system, the possibility that a failure occurs is even greater. Terrorism has many definitions because of its complexity. According to one of them it is a form of political crime, characterized by the deliberate use of violence against civilians or threat of its use, with the intention of intimidating the public and decision-makers and their forcing to certain acts or maintenance, in order to complete or partially achieve political or other social aims. Our Criminal Law defines terrorism as a threat to the constitutional order or security of Serbia by causing an explosion or fire or by taking some other generally dangerous acts or through kidnapping, taking hostages or unlawful detention of a person, or through some other act of violence or threats, by taking some generally dangerous acts or using nuclear, chemical, bacteriological or other means to create feelings of fear and insecurity among citizens. The penalty provided for this criminal act is five to fifteen years in prison.

In addition to human casualties, the consequences of terrorist acts include huge material damage that is necessary to repair very quickly, which is in some cases done simultaneously with the search for survivors. The functioning of emergency services for the first response is critical. The response of medical and municipal services of local governments is of great importance. When repairing the consequences of terrorist acts the most important aspects are speed and efficiency, especially if the attack had human casualties, in order to reduce the potential spread of infectious diseases.

Unlike other, arguably more common and usual risks, the terrorism risk is very difficult to predict. This risk has low probability of occurrence, but if it happens, it leaves huge consequences. Even if the probability of occurrence of this risk is known, we can almost never with certainty know the exact targets of terrorists. Terrorist actions are usually unexpected and unpredictable. The aim of the terrorist action is to suddenly cause damage to the opposite side in order to achieve certain political effects or aims. Terrorists always want to achieve the worst case scenario. They are led by the counterlogic they target those objects which the organization regards the "safest" in order to induce a state of shock. Their target is always something that is the most secured and safest for the organization or a part of an organization least likely to be affected. Such objects for them are the greatest challenges and at the same time represent the proof of their power. In addition to concrete actions, much attention is often directed at preventing an effective response and evacuation.

It is very difficult, almost impossible, to determine with certainty the probability of the occurrence of a terrorist attack. The reason is that the factors that influence the probability of terrorist events are not constant in time, especially because the circumstances of regional policies usually serve as an inspiration and a decisive trigger

for such incidents. According to the latest report by Europol (TE-SAT 2013), there were a total of 219 terrorist attacks carried out in the Member States. Of these numbers, 215 attacks took place in France and 54 in Spain and are mostly related to separatist groups. However, most of these attacks were incidents on a small scale. Historical information about previous events are not the most reliable source for assessing the risk of terrorism, because the conditions that motivate terrorists can change in a very short time interval. Because of the small number of these events, quantitative methods are not very useful. However, they can be very useful in the assessment of damage in a financial sense. Environmental factors that represent a good basis for the emergence of terrorist activity are: local, political and economic problems, bad economic and social situation, high activity of religious and other extremist groups, the armed struggle, the existence of critical infrastructure for undertaking of terrorist actions and the lack of effective legal institutions.

Although it represents a risk with high consequences, because of the small probability the risk of a terrorist attack is very often overlooked. However, the situation is different for critical infrastructures, such as chemical factories, oil refineries, airports, harbors, where terrorism is a much greater threat.

One of the ways to understand the risk of low probability events is to deconstruct the problem into two separate parts: the strategic environment and the organizational capacity - organizational environment. The capacities of the organization are primarily related to the vulnerability of the organization, readiness capacity to respond to terrorism constitutes, a possibility of a terrorist attack, a kind of resistance the organization can offer, in brief all its internal capacities. On the other hand when we talk about the environment, we consider the reaction of the environment in case a terrorist act occurs, help and assistance, evacuation efforts etc. We must take into account the interdependence of these two environments (strategic and organizational) and problems that interdependencies may cause.

Terrorists now have readily available materials and components of chemical and bacteriological weapons, and are increasingly talking about the possibilities of chemical, biological and agricultural terrorism as a form of modern terrorism. Besides, electronic terrorism as an integral part of information terrorism has become a real phenomenon considering that there is a possibility of a secret action on the state and military technical systems and infrastructure facilities. As for the terrorist attacks on the elements of the energy distribution (such as gas-oil derivatives), or on petrol and gas stations, the forms of terrorist activities from the aspect of tools/arms can be only the fire-explosive and radiological ones (chemical and biological agents cannot harm energy distribution network, that is, they will not harm petrol-natural gas stations).

Terrorists almost always choose the most vulnerable targets, innocent people; they seek to provoke fear in the population or want to intimidate government specific countries. Also terrorists want the media attention, so they very often choose the places with a large concentration of people in one place, such as subways, airplanes, theaters, bus stations. It is difficult to predict when, where and at what time the terrorist attack will occur. Unexpectedness and the unreadiness are the characteristics of almost every crisis, including this one.

5 CONCLUSION

Due to the increase in the number and consequences of crisis situations, community safety will increasingly depend on the maintenance of vital functions of society, which includes the ability to ensure the functioning of government, business and civil society institutions, maintenance of critical infrastructure and democratic principles for the functioning of government institutions in terms of the resulting situation. To prevent dramatic events and destructive disasters or mitigate potential consequences, it is necessary to possess a good knowledge of these events, processes, phenomena and their causes, whether these are natural disasters, technical and technological disasters or terrorist attacks.

Risk management system is necessary to develop a multidisciplinary approach towards defining prevention, and the risk elimination or reduction in order to achieve the security of people, property and business. Timely detection of threats, prevention and mitigation of the potential consequences represent the priority task, and then the appropriate response if an accident occurs. Prevention of emergencies makes the basic assumption of effective crisis management. Together with all the technical, technological, legal and normative, organizational and other measures and solutions, knowledge is the basis for safety management and development of new competencies that employees in terms of organizational learning must develop.

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INTERVENTION SPECIALIST UNITS OF CIVIL PROTECTION IN CROATIA

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Abstract: This paper gives an overview of the organization, structure and purpose of the intervention of specialized units of civil protection Croatian Government.

Key words: specialist units, civil defense, organization, structure

1. INTRODUCTION

Intervention specialist units of Civil Protection of the Republic of Croatia (ISPCZRH) were established by the Director of the National Protection and Rescue Directorate (NPRD) as the basic operating power of civil protection at the state level.

ISPCZ of Republic of Croatia:

- are designed to perform complex and extensive tasks in the protection and rescue of people, material goods and to eliminate the consequences of natural, technological and other disasters and hazards
- are used, in general, to perform tasks that are compatible with their primary organizational purpose and specialist skills., depending on the circumstances, can be used to perform other tasks for the rescue of people and property,
- represent the basic operational capability that Croatia declared for international assistance in the event of major accidents and disasters

2. ORGANISATION AND STRUCTURE OF ISPCZRH

2.1. The organizational principles

ISPCZRH consist of professional core complemented by selected which according to prescribed plans staffing allocated from civic associations and based on the obligation to serve in civil protection which citizens have under the Law on Defense.

Professional core structural units are part of the National Protection and Rescue, protection and rescue departments in the regional offices of protection and rescue of Zagreb, Rijeka, Split and Osijek. Departments have completed specialized rescuers, trained for action in emergencies. They are used to carry out the tasks listed under the vision of using these capabilities. Employees of the department of protection and rescue (professional rescuers) were assigned to command positions in the units.

Professional rescuers are regularly trained for their tasks, acquire and maintain certification, rehearsing for the performance of tasks, plan and implement the preparation of reservists deployed in troops. These activities include technical festivals, checking

planning solutions, operational practice rescue techniques, participation in exercises and equipment maintenance technically correct.

Professional core units plan and implement the mobilization of the reserve components, propose the mobilization of financial support, in particular the implementation of the transport equipment, resources and personnel to the place of use. They plan to meet the logistics needs of all units for independent action up to 7 days, on the principle of self-sufficiency.

This means that the National Protection and Rescue provides for ISPCZRH:

- acquisition of specialist skills and knowledge,
- autonomous, independent logistics, including mobility,
- communication tools.

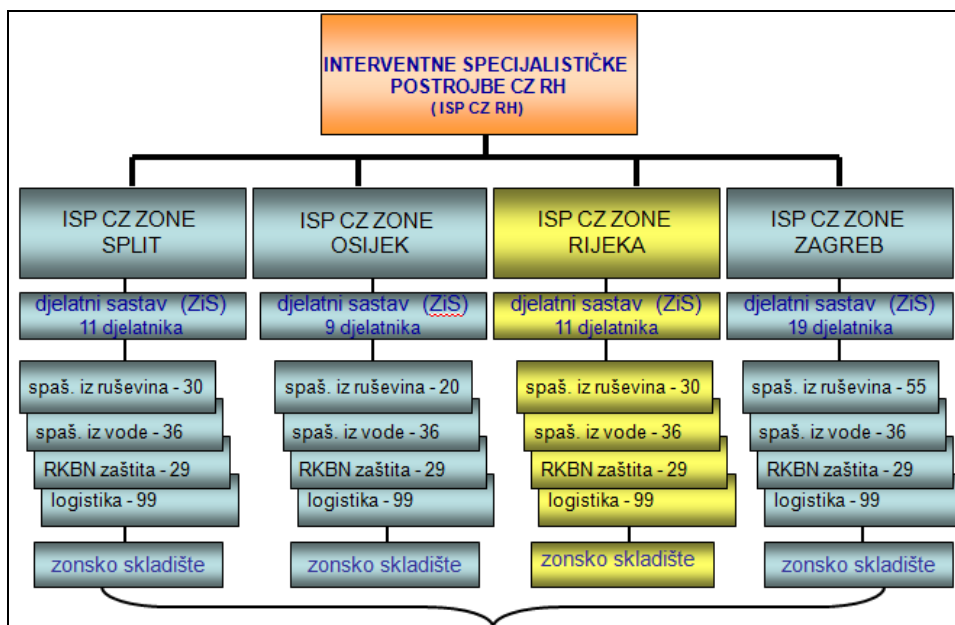
2.2. The organization scheme of ISPCZRH

ISPCZ-and Croatian are established and fill the territorial principle at the national level in four zones of the following counties, including:

- Zone Zagreb - Zagreb, Zagreb County, Sisak County, Karlovac County, Krapina-Zagorje County, Varazdin, Koprivnica-Križevci, Međimurje County, Bjelovar County, Split - Zadar County, Šibensko-kninska County, Splitsko-dalmatinska County, Dubrovačko-neretvanska County;
- Zone Rijeka - Istria, Lika-Senj, Primorje-Gorski Kotar County;
- Zone Osijek - Osijek-Baranja County, Vukovar-Sirmium, Pozega-Slavonia, Brod-Posavina, Virovitica.

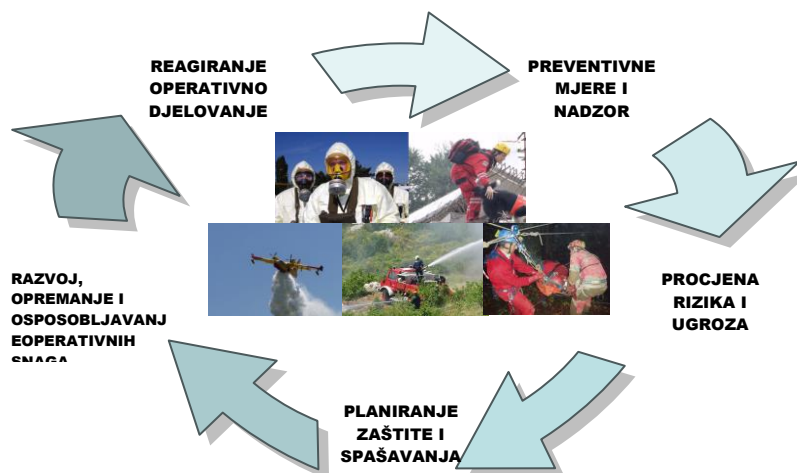


Picture 1 Zone ISPCZRH
izvor: www.duzs.hr



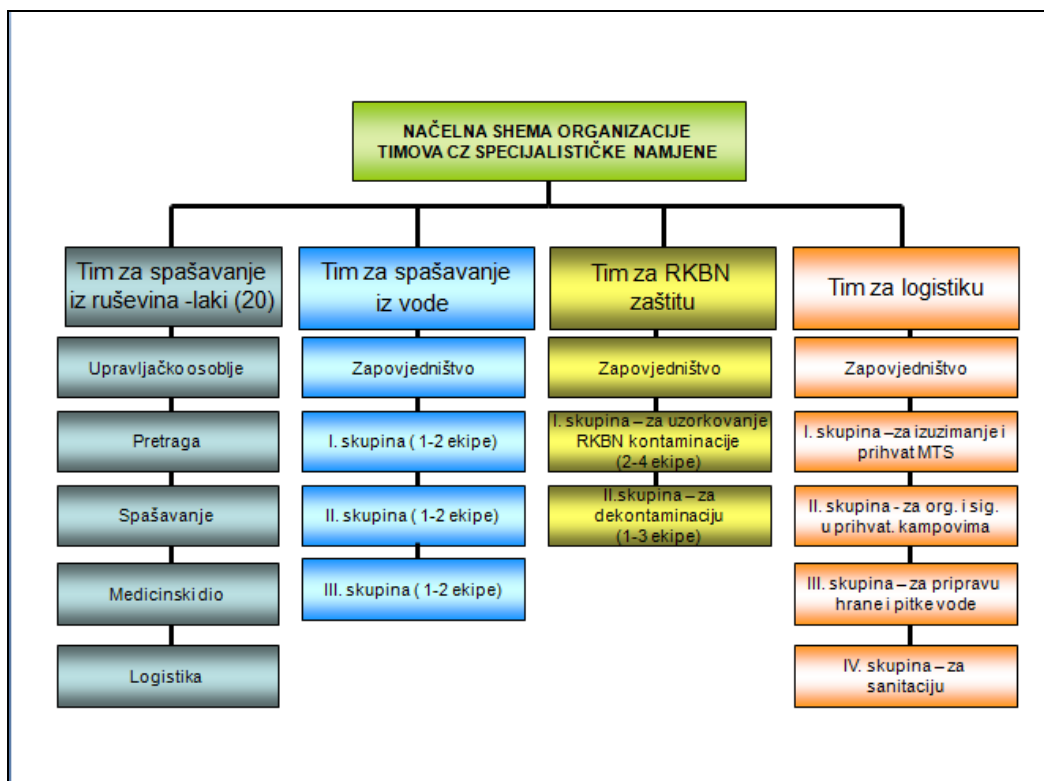
Picture 2 Zone scheme ISPCZRH

source: www.duzs.hr



Picture 3 Organisation of ISPCZRH

source: www.duzs.hr



Picture 4 Schematic representation of the civil protection teams of special purposes
source: www.duzs.hr

Rescue from ruins

The basic structural module each ISPCZRH the team. Rescue team from the ruins (USAR - Urban Search and Rescue) the intervention specialist unit civil protection Republic Croatian rescue from the rubble and is classified into three categories:

Light category team

Tim lightweight consists of 20 members and two of wanted a dog. It is organized for surface search and rescue, and act immediately after an emergency. Tim lightweight designed for search and rescue in the Republic of Croatia, and to provide assistance to neighboring countries.

Middle category team

Middle range team specializes in technical search and rescue operations in structural ruins. Dressed for breaking, drilling and cutting of concrete as we are usually made of residential building (no cutting, Drilling reinforced concrete). It is composed of 30 members and three credit dog (these lightweight + 10 members of the dog).



Picture 5 Light category team
source: www.hvz.hr



Picture 6 DUZS practice, middle category team
source: www.duzs.hr

Heavy category team

Tim heavyweight is organized for the most demanding technical search and rescue operations in structural ruins, especially those involving buildings constructed with reinforced concrete or reinforced. It is intended to provide assistance to the Republic of Croatia and abroad in a sudden accident, which resulted in the collapse of a number of multi-reinforced structure, typical in urban areas. It is used when local resources or resources of the affected countries are insufficient or do not have the ability to do the

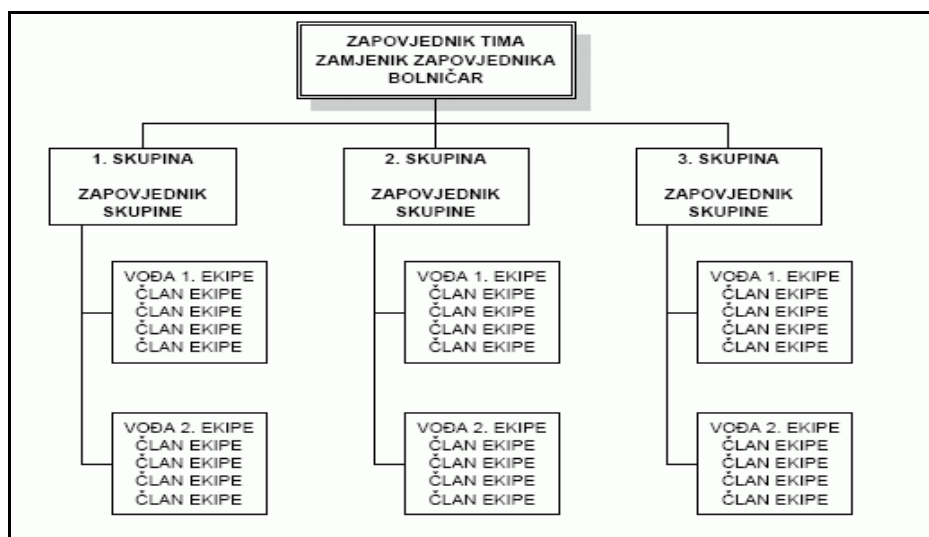
most demanding search and rescue. Personal structure of troops heavyweight has 55 members and 4 credit dog (Moderate + 25 members of the dog).

Personal structure rescue team from the rubble was organized through the structure of a team so that all categories (easy, medium and hard) contain the same elements of the team:

- management staff,
- elements of search,
- elements of rescue,
- elements of medical support,
- elements of psychological support,
- logistical elements.

Water rescue

Team for protection and rescue from water is composed of three groups. Each group consists of a group commander and two teams of five members, and the total size of the team has 36 members



Picture 7 Schematic representation of protection and rescue team from the water
source: NN 111/07

RKBN protection

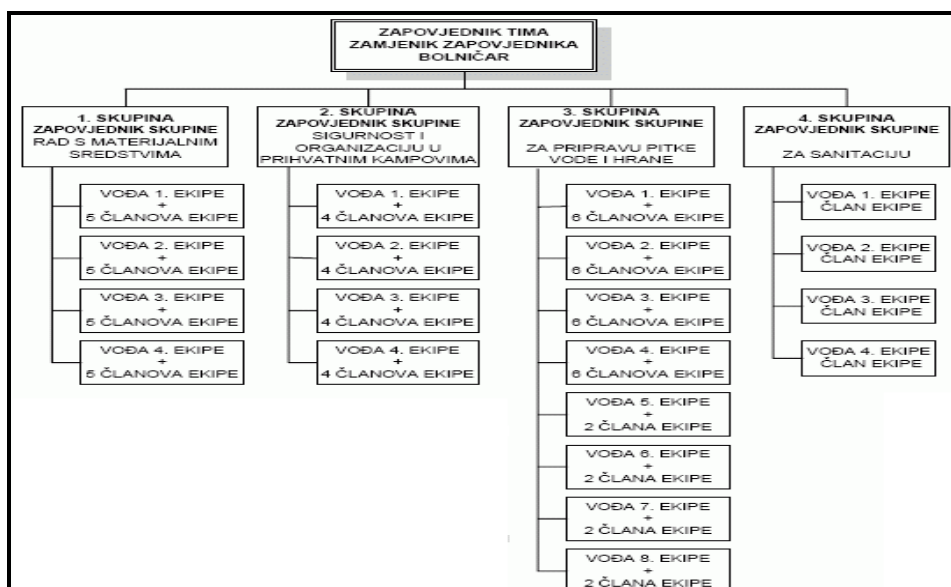
The team for radiological, chemical, biological and nuclear protection is composed of two groups and it has 29 members:

1. group sampling RKBN contamination consisting of the commanders of the four teams in the part of the operator RKBN detectors and two assistants;
2. group for decontamination consisting of the commander and the three teams decontaminator with four members.

Logistics

Team Logistics is made up of four groups and it has 99 members:

- Group 1 for exclusion and acceptance of material resources of the zone warehouses NPRD, which consists of a group commander and four teams of 5 members;
- Group 2 for the organization and security in the Camps in the composition of the group commander and four teams of four members;
- Group 3 for the preparation of food and drinking water in the composition of the group commander and four teams for the preparation of food for seven members (two chefs and five assistants to work in the kitchen) and four teams to ensure the preparation of drinking water in the composition of three members (one operator - the operator on the collective water purifier and two assistants);
- Group 4 for sanitation in the composition of the group commander and four teams of two sanitarian).



Picture 7 Schematic of logistics
source: NN 111/07

Material organization of troops

The material structure of intervention specialist unit civil protection units and the Croatian Civil Defence special purposes determined by the tasks to dedicated units and the standardized equipment and material and technical means for each of the specialties, which are available on the market and is compatible with equipment of other task forces with which it is planned joint action in the protection and rescue actions in Croatia and beyond.

Personal and material organization of the civil protection units can be changed in accordance with changes in vulnerability assessments, to determine the new requirements in terms of their involvement in a unique system of protection and rescue the Croatian as well as the introduction of new technical standards for equipment and material technical funds, for ensuring safe and efficient operation.

Personal equipment for each member

Each member of the intervention specialist units should be equipped with:

jumpsuit, belt, cap, shirt, shoes, gloves, socks, raincoats, reflective vest, Subdivision, a waterproof jacket;

safety helmet with a flashlight, a respirator, kneepads and elbow, kit RKBN protection, handheld waterproof flashlight;

knife, utensils, hygiene kit, backpack, water purifier, sleeping bag.

Collective equipment

Collective equipment is diverse and varies by type. All teams should be equipped with off-road and commercial vehicles, generators and cars with traction.

3. CONCLUSION

ISPCZRH organized and established as the basic operational capacity of civil protection at the national level under the direct responsibility of the National Protection and Rescue and Civil Protection Command in Croatia. They are intended for operational implementation of highly specialist task of saving water, radiological-chemical-biological-nuclear protection (RKBN) rescue from the rubble and logistics operations in the event of disasters and major accidents.

The primary mission ISPCZRH to ensure the most efficient use of material resources and human capacity in the protection and rescue of people, material goods and the environment in catastrophe and terrible misery. They are intended for supporting the carriers in carrying out all forms of humanitarian operations in the Republic of Croatia, and to participate in the provision of international assistance.

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CRISIS MANAGEMENT SITUATIONS

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Abstract: This paper presents the process of crisis management, as well as the importance of international and national organizations and associations. The importance of the profession, without which no successful crisis management.

Keywords: management, crisis situation, processes, professions

1. INTRODUCTION

The main task of crisis management is to meet the basic needs with maximum efficiency and speed, but with limited resources and in the absence of the necessary information. Crisis management is an essential discipline that deals with the risks and their prevention. It involves preparing for disaster before it actually happens. It is actually a response to them. It is an ongoing process and that includes the participation of all individuals, groups and communities to manage risks to avoid or mitigate the effects of disasters that occur above risks.

Effectiveness of actions taken in the management of the crisis based on a thorough organization of emergency plans at all levels of involvement of government and non-government organizations. Action Taken on any of these levels (individual, group, common) affects all the other levels.

The responsibility for governmental emergency management with the institutions for civil defense or within the conventional structure of the emergency services. In the case of private sector management in crisis situations sometimes referred to as business continuity planning.

Historically, emergency management is a major task, which is to protect civilians from military attack. Today, he is perceived as the protection of the civil population in times of peace as in times of war. The term civil protection is widely used in the European Union and relates to systems and resources approved by the government in order to protect the civilian population.

The emphasis is increasingly placing the on the political dimension of security ii. The main focus, the center of all the mitigation preparedness cycle of urgency.

Characteristics of crisis situations

A negative event occurs and is so significant that it may threaten the survival of the organization;

There is a sense of urgency, surprises and great dangers that leave little time for crucial decisions;

The current feeling of inability to face the crisis

Crucial changes are dangerous and can have a negative or a positive outcome;
Crisis situations are dynamic, fluid and unstable

2. STAGES AND PROFESSIONAL ACTIVITIES

The main factor for the management of the crisis are the local economic and social issues. World experts like Frederick Cunyja for help in global disasters are perceived as the core of all economies. There lies the essence of the problem, which the biggest problem may arise from it.

He felt that the process of managing emergency situations must include long-term work on infrastructure, public awareness, and even about the problem of human justice. This is especially important in developing countries.

The process of emergency management involves four phases:

- Mitigation (relieve)
- Preparedness
- Reply
- Recovery

2.1. Mitigation (reducing)

Mitigation activities seeks to preclude the potential dangers or already existing, whether they turn into globulin disaster or to attempt to reduce the effects already produced a disaster. The main task of mitigation phase that focuses on long-term measures to eliminate or reduce risks arising from the dangers. It is considered a measure of recovery if applied in the event of a disaster already occurred.

The basic division of mitigation measures is division on: structural and non-structural. Structural measures use technological solutions like flood protection canals and dams. No structural measures include legislation, land-use planning and security above all. Some structural mitigation measures may have negative consequences for the ecosystem. Mitigation is considered the best cost - effective method to reduce the effects caused danger, but it is not always suitable. Mitigation involves ensuring the necessary regulation for the elaboration of an evacuation, the implementation of sanctions against those who refuse to obey the regulations and communicate potential risks to the public. The basic precursor activity to the mitigation of risk identification. Evaluation of physical risk refers to the process of identification and evaluation of risk. Risks specific dangers combines the probability and the impact of specific risk. The higher the risk the higher the risk. The higher the risk the greater the mitigation efforts for classification of emergency vulnerability specific threat. The geographical location in which there is no vulnerability creates no risk.

2.2. Readiness

At this stage, the main task of the manager in a crisis situation to develop plans of action for when the disaster. Under those measures, the mean:

Communication plans with easy understandable complex terminology and methods;
Proper maintenance and training services for emergency management, including mass human resources such as emergency response teams in communities;

The development and training of emergency population warning methods combined with emergency shelters and evacuation plans;

Storage, inventory and maintenance supplies and equipment for emergency situations;

Equally important, the development of organizations of trained volunteers among the civilian population. Professional emergency workers are soon run out in the mass world, emergency situations and their deficit must be compensated with trained and valuable volunteers. Their work is far more accepted and respected in the world.

Another task of preparedness is forecasting the number of victims, and research expected number of deaths or injuries in certain types of events.

The response

The response phase includes activation and mobilization of essential emergency services and the first person to come in the disaster areas. These are the fire brigade, ambulance and police.

When this phase is carried out as a military operation, it uses the term aid operations in accidents (DRO - Disaster Relief Operation) that may occur after the evacuation from war-affected areas (NEO - Non-combatant evacuation operation). This assistance may be granted and of specialist rescue teams.

Emergency Plan must be very well trained and developed as part of the preparedness phase because as such enables efficient coordination of rescue. Where necessary, and efforts in the search and rescue can begin very early. Depending on injuries that a man suffers, access of air and water, the outside temperature, the vast majority of casualties' person will die within 72 hours after impact.

The main response to major disasters either natural or terrorist caused by people lying on the existing organizational systems and processes of emergency management: the Federal Response Plan and FRP incident command system ICs. These systems are established through the principals of Unified Command UC and mutual assistance MA.

2.3. The recovery

The purpose of the recovery phase is the return of the injured area to its original state. The main difference of this phase of the phase response is the center of operations, activities related to recovery are directed toward issues and decisions that must be made after immediate needs are addressed.

Activity related to the recovery of the injured area, including the re-re-construction of the destroyed building, re-employment and finishing and repair of other essential infrastructure.

It is important to point out that the original intention of the activities around the recovery is taking advantage of the so-called. Window of opportunity for application mitigative measures that would otherwise be unpopular.

The population in the affected areas will be easier and more decisively take measures mitigative when a recent disaster is in fresh memory. It is essential that the time to act.

3. AND PERSONAL ACTIVITIES

3.1. Mitigation

Personal mitigation is based on the knowledge and avoiding unnecessary risk, which includes the assessment of possible risks to personal health and personal belongings.

Personal structural mitigation in earthquake prone areas includes installation of an Earthquake Valve to momentarily interrupts the supply of buildings with natural gas which is led by the seismic adjustment of the building and securing of items inside the building structure for better protection against seismic activity.

The methods of formation include the mounting of furniture, refrigerators, water heaters and other parts with course setting of cabinet latches. The areas that are extremely prone to flooding houses can be built on stilts as is the case in South Asia.

In areas prone to prolonged electricity mitigation measures is installing generators. The re-construction of storm cellars and fallout shelters are further examples of personal mitigative measures.

Mitigation measures are divided into structural and non-structural measures taken to limit the effects of the accident.

Structural Mitigation - involves proper layout of building, particularly to make itself more resistant to disasters.

Non Structural organization - including measures taken for everything that was not essential to improving the structure of the building.

3.2 Readiness

Personal preparedness based its activities on preparing equipment and procedures, activities and processes for use after the occurrence of the accident, and their detailed planning. Such measures activities are typical and include the construction of shelters, installation of warning devices, creation of back services, and primarily rehearsing evacuation plans.

There are two simple measures that can help prepare the individual for sitting out the event or evacuating, as inevitable. It can be prepared supply equipment for emergency situations while in case of need to hide in the shelter can create a stockpile of supplies. Many governments often create the preparation of a survival kit such as the so-called. 72-hour kit. Things it contains are essential for survival such as food, medicines, batteries, candles and money.

3.3 Responses

The response phase can start with search and rescue as it usually is, but the center of all the tasks and activities to the action on meeting the basic humanitarian needs of the affected population. In this you can certainly get help from international organizations and agencies.

The most important thing is the efficient coordination in assisting, helping in accidents especially if the capacity of local agencies for crisis management is insufficient or diminished by the disaster itself. The actions are a form of shelter in place or evacuation. In the case of moving the scene of the accident, the family would be prepared to defend himself at his home without external forms of support.

In the process of evacuation of families leaving the scene of an accident car or other transport means so that first of all they took the greatest possible amount of stock needed for survival, possibly including a tent for shelter.

3.4 The Recovery

Recovery phase begins at the moment of termination of life danger. Expert advice is that during the reconstruction of the review sites or construction structure for the building. In exceptional cases are keeping the houses because of avulsed war, famine and severe epidemics, which may last for a year or longer. Lull followed by recovery in home building. Planners of these events obtained bulk foods and appropriate storage and preparation of food.

4. THE PROFESSION

Professional experts prepared for this situation can focus its activities on government and community preparedness or readiness of private business. They have through their work very much trained in a wide variety of disciplines that are of great importance to them in the emergency life-cycle.

Training allows local, state, federal and private organizations and ranges from public information and to high-level incident command and tactical skills such as studying terrorism and control of such situations.

Educational opportunities are increasing for those seeking undergraduate studies in emergency management disciplines. Professional certifications such as Certified Emergency managers and certified professionals are becoming increasingly necessary in the world.

The tools

In retrospect the continuity feature of emergency management has resulted in a new concept, information systems for emergency management EMIS Educational Management Information System. This system has the task to support and encourage the process of emergency management by providing an infrastructure that integrates plans for emergency cases at all levels of involvement of government and those outside of it and taking advantage of the management of all related resources for all four current phase of emergency.

5. INTERNATIONAL ORGANISATIONS

5.1 International Association of Emergency managers

IAEM- International Association of Emergency Managers is a non-profit educational organization dedicated primarily to promoting the goals of saving lives and protecting property during emergencies and disasters. The task is to serve its members by providing information, networking and professional opportunities, and improve the profession of crisis management.

5.2 Red cross

National Red Cross play a central role in responding to emergencies. IFRC - International Federation of Red Cross and Red Crescent Societies has the task to send in the affected country assessment teams that specialize in recovery component of the emergency management framework.

5.3 The United Nations

Within the United Nations system responsibility for emergency response based on the Resident Coordinator within the affected country. In practice international response will be coordinated, if requested by the government of the affected country, the Office for the Coordination of Humanitarian Affairs of the UN. UN - OCHA - Office for the coordination of Humanitarian Affairs by sending a UN team for Disaster Assessment and Coordination UNDAC - The United Nations Disaster Assessment and coordination.

5.4 The World Bank

The World Bank is looking at the history of hundreds of approved operations and donated money for their implementation. Typical concentrations for prevention and mitigation projects include preventive measures such as early warning measures and education campaigns to discourage farmers so. Cut and burn agriculture that ignites forest fires; early-warning systems for hurricanes and flood prevention mechanisms.

In June 2006, the World Bank has established a Global Service for Disaster Reduction and Recovery GFDRR - Global Facility for Disaster and Record, long-term partnership with other donors to help to reduce the losses in the disaster.

NATIONAL ORGANISATIONS

Australia

The main coordination and advisory body for emergency management in Australia is EMA - Emergency Management Australia. Each state has its own State Emergency Service. Arrangements are in place for state and federal cooperation.

Canada

PSC - Public Safety Canada is Canada's national agency for emergency management. Each province should set up their own organizations to manage the crisis. PSC is tasked to coordinate and support the activities of federal organizations ensuring national security of Canadians.

Work with other levels of government, emergency services, community groups and the private sector. Her work is based on a number of rules and laws that are covered by the law on public safety and Emergency Preparedness.

Germany

In Germany, the government controls the German Katastrophenschutz I Zivilschutz. Germany's armed forces, the German Federal Police and the 16 state police forces form the core forces in disaster relief operations.

India

In India, the task of emergency management has a National Disaster Management of India - the national disaster management in India. It is a government organization subordinate to the Interior Ministry. Recently, the government has formed EMRI - Emergency Management and Research Institute. This group represents a public-private partnership. Some labor actions have prompted the preparation of emergency management training for emergency services and the creation of a single emergency number and establishment of standards for personnel, equipment and training.

New Zealand

In New Zealand, responsibility for emergency management moves from the local to the national level, depending on the nature of an emergency situation or risk reduction program. Within each region, local governments are united in a group of 16 Civil Protection emergency management CDEMG. Each is responsible for ensuring that a stronger emergency management. The central government has the authority to coordinate the response through NCMC - National crisis center operated by the Ministry on civil defense and emergency management MCDEM.

Russia

In Russia operates Ministry for Emergency Situations EMERCOM in charge of the fire service, civil defense, search and rescue, including rescue services after natural and anthropogenic disasters.

The United Kingdom

The Civilian Security Act of 2004 legalized the responsibilities of all categories of services that respond to emergencies. Civilian Secretariat for emergencies The CCA is the regional framework agreements on the level of local authorities. Training of disaster management are conducted at the local level. Institute of Emergency Management - a voluntary organization established for the purpose of providing advisory services to government, media and commercial sectors. The Professional Society for crises the Emergency Planning Society.

United States of America

Within the Department of Homeland Security acts Federal Emergency Management Agency- FEMA. FEMA has developed hazusu, a software program that plays a central role in the process of risk assessment in the country. States and its territories are covered by one of ten regions for FEMA - make emergency management purposes. If the emergency is terrorist related minister will initiate the National Response Framework (NRF). This allows the inclusion of federal resources will integrate in local, county, state, or tribal entities. Management will continue to be handled at the lowest possible level utilizing the National Tract management incidents NIMS. CITIZIEN CORPS is an organization of volunteer service programs, administered locally and coordinated nationally by DHS, which seek to mitigate disaster and prepare the population for emergency response corps public education, training, and outreach.

6 THE CONCLUSION

Crisis management is essential for each country. Through it increases stability and security of the state, citizens and thus individuals. We see examples of many foreign countries very much invested in their systems management in crisis situations and to be emulated them.

The main task of crisis management is to meet the basic needs with maximum efficiency and speed, but with limited resources and in the absence of the necessary information. Crisis management is an essential discipline that deals with the risks and their prevention. It involves preparing for disaster before it actually happens. It is actually a response to them. It is an ongoing process and that includes the participation of all individuals, groups and communities to manage risks to avoid or mitigate the effects of disasters that occur above risks.

Develop services and improve existing systems. It's a big call authorities to preserve human life and safety of citizens.

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The FORMATION and DEVELOPMENT of PROTECTION and RESCUE SYSTEM in the REPUBLIC of SERBIA

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Abstract: Basics of protection and rescue system makes civil protection, which is developed in Republic of Serbia on basics that are settled in ex Yugoslavia. Bearing in mind that Serbia became an independent state there is a need to establish a uniform system of protection and rescue. This need arose from the fact that war, natural disasters and technical and technological accidents and other hazards can have major consequences for people, the environment and material goods. Construction of a single system is of general interest for the Republic of Serbia, a basic document that defines protection and rescue is The National Strategy for protection and rescue in emergency situations, while it is directly regulated by the Law on emergency situations.

Keywords: Civil protection, system of protection and rescue.

1. INTRODUCTION

With a tendency to establish unique system of protection and rescue, bringing National strategy of protection and rescue, primary hypothesis are established to timely treatment with many of state authorities and non-state subjects in extremely situations, with participating in protection and rescue of people and material goods. According to that, establishing control and implementing organs within a system of protection and rescue in Ministry of Internal Affairs there are made law conditions for implementation of preventive and operational measures, and accomplish missions of protection and rescue, and so for recuperation of consequences. For its function, place and organization, civil protection is most important and primary component of system of protection and rescue, part around which the associated many other parts of system of protection and rescue. Missions of protection and rescue are of general interest for Republic of Serbia. Accordingly to it all of system activities are performed with National strategy of protection and rescue, principle International Humanitarian Law on the protection of people and material goods by natural, technology and other accidents, as well as taken over international duty. „System of protection and rescue coverage: programming, planning, organization and training, implementation, supervision and financing measures and activities for protection and rescue of population, material goods and environment from natural, technical-technological and other accidents, in order to prevent danger, to decrease number of accidents and victims, to remove and alleviate harmful effects and consequences created by nature and other accidents“.[1]

System of protection and rescue is a part of national security system and integrated form of managing and organization system subjects and rescue. Build-up integrated system of protection and rescue Republic of Serbia provides according to law and other regulations, as well as programs, plans, and documents which are relating to protection and rescue

and civil protection. Subjects of system of protection and rescue are: 1) public administration organs, autonomous province organs and local governments organs; 2) economic society, as well as other legal entities and entrepreneurs and 3) citizens, groups of citizens, and many other associations, professional and other organizations.[3]

2. DANGERS FOR WHICH IT WAS CREATED A SYSTEM OF PROTECTION AND RESCUE

The appearance new sources of threat to global and local character, causes the functions of civil defense are becoming more complex. Forms and types of threats to substantially influence the creation of the defense system, the global risk on a daily basis into question the survival of the human community. World war as the possibility of more rejects, but there are other forms of global threats, such as recurrent natural disasters, increasing the possibility of technical and technological accidents, terrorist attacks, etc. Accordingly, each country, including the Republic of Serbia, seeks to reduce the risks and limit the consequences of disasters as well as to increase the resilience of society to disasters. However, the current level of organization and training of protection and rescue system is significantly behind the estimated needs and objective possibilities which the state has.[2]

The appearance endangering sources outside the military sphere, increasing human casualties caused by natural and technical and technological disasters and increasing material damage resulted in the development of protective functions of civilian architecture of society. In addition, one country can be compromised consequences of disasters occurring in other countries (the consequences of the Chernobyl disaster of 1986 were felt and still feel in many countries of the world).[2]

Considering that the Republic of Serbia an independent state, and that is exposed to various risks of natural and technological character, there is a need to establish a uniform system of protection and rescue. And what is the system of protection and rescue required the Republic of Serbia from the standpoint of the estimated risks that may have the character of emergency, which specify that system and its mission, designed by the National Strategy for protection and rescue, while the Law on Emergency Situations established the necessary conditions for its functioning in practice. The formation of an integrated protection and rescue system is necessary because the emergency situation caused by natural disasters or human-induced, daily endanger human life and the environment. Our region is at risk from different types of natural hazards (floods, drought, temperature extremes, earthquakes, storms, etc.). The fact is that global climate change also contribute to environmental degradation and human life and health.[3]

3. DEVELOPMENT OF PROTECTION AND RESCUE SYSTEM IN THE REPUBLIC OF SERBIA

Defense system is from the beginning of '90. destroyed, the adoption of constitution of Republic of Serbia in 2006 there was in force a Law of protection from elementary and other accidents, which never gave legal basis for functioning of the system. Due to the fact that increased number of accidents, the existing system needed to be established on much more steadily basis. That is why there is an intensive work in a period of 2006 and 2009 for preparation of new law which would be more effective and adjusted to new

system of protection and rescue. Assembly of Republic of Serbia on 29.12.2009. has brought Law of emergency situations and civil protection, with which has created conditions for forming integrated system of protection and rescue. With that are created conditions to be formed a new system which would be more effective than previous. Also it was necessary to bring about 15 statutes and decision on a level of government of republic of Serbia, and about 16 rule book on a level by Ministry of Internal Affairs, then make estimates of vulnerability and plans of protection and rescue on local, regional and republic level, to bring in unique number for emergency call 112, to develop and to improve international cooperation.[3]

3.1. National strategy of protection and rescue

The law about emergency situations (in next paragraph Law) is base for bringing National strategy of protection and rescue (in next paragraph strategy), which is defined unified action for system of protection and rescue. Base for production National strategy is contained, too, in other national and international documents, as National program for integration Republic of Serbia in European Union, National strategy sustainable development, Strategy of national safety of Republic of Serbia, etc.

System of protection and rescue in Republic of Serbia is regulated by law:

- Constitution,
- National strategy of protection and rescue,
- Law about emergency situations,
- Law about protection of fire,
- Other laws and sub-legal acts (statute, regulations, decisions).

Taken over international commitments, signed and ratified international contracts.

Purpose of strategy is protection of life, health and citizens' property, environment and cultural heritage of Serbia. National strategy defines and determines national mechanism and directives of programs for lowering disasters produced by natural advents and danger by accidents, protection, answer and recovery from consequences.

Law about emergency situations is immediately settled system of protection and rescue, and it's been projected to accomplish its function in war circumstances, too. Base function of protection and rescue is protection and rescue of people and cultural goods and environment when there are vital social values threatened by natural disaster, technical-technology accidents, misadventure, disasters, terrorist acts.[4]

Strategy vision is well-built, all-inclusive, effective system for decreasing of risks and consequences from elementary disasters and other disasters which are integrated by managing emergency situations in Republic of Serbia with which there is increase security and sustainable development in the region. While is mission of strategy developing condition for building society resistant to disasters of an integrated and effective system of protection and rescue in Republic of Serbia until 2016.[4]

3.2 Law about in extremely situations

With this kind of law there shall be regulated action, promulgation and management in extremely situations; system of protection and rescue of people, material and cultural goods and environment from natural disasters, technical and technological disasters - accidents and disasters, the consequences of terrorism, war and other major accidents, jurisdiction of state authorities, autonomous provinces, local governments and

participating police and Army of Serbia in protection and rescue; rights and duties of citizens, economic society, other legal entities and entrepreneur named in connection with emergency situations; organization and activity of civil protection on protection, rescuing and removing consequences of elementary disasters and other disasters; financing; inspection supervising, international cooperation and other questions of importance for organization and function system of protection and rescue.[5]

The main function of protection and rescue system, is the protection and rescue of people, material and cultural goods and the environment in situations where these vital social values threatened certain events such as natural disasters, technical and technological disasters, accidents and catastrophes, terroristic acts and war circumstances and consequences they carry with them. With this law elementary situation is defined as a condition when he risks or threats or consequences of disaster, extraordinary events and other dangers for citizens, environment and material goods with such latitude and intensity that their occurrence or consequences is not possible to prevent or remove with regular operation of the competent authorities and services, which is why their ease and removal is necessary to use special measures, forces and resources, with enhanced mode.[1]

In accordance to this law for coordination and leadership of protection and rescue in emergency situation, as operational and professional body there are educated headquarters for emergency situations:

- For territory of Republic of Serbia – Republic headquarters in emergency situations, which educates the Government;
- For territory of autonomous province – autonomous headquarters for emergency situations, which educates Republic headquarters for emergency situations;
- For territory of city – city headquarters for emergency situations, which educates city assembly

4. CONCEPT AND TASKS OF PROTECTION AND RESCUE

System of protection and rescue defines as integrated form of managing and organizing subjects of system of protection and rescue on implementation preventive and operative implementation tasks of civil protection and rescue people and goods from consequences of elementary disasters and other disasters, including recovery measures.[1]

Basic tasks of system of protection and rescue:

- programming and planning measures and activities on protection and rescue
- protection as a set of preventive measures directed on strengthening resistance community
- coordination in establishing, production and realization of strategy
- rescue and assistance
- reduction and removing direct consequences made by elementary disasters and other disasters, by which are meant measures and activities which are undertaken for establishing necessary conditions for lives of citizens at perished place
- organizing, preparation and training search and rescue forces
- organizing, preparation and training state authorities, social economics and others of protection and rescue

- organizing and training citizens for personal, mutual and collective protection
- providing and searching help and cooperation with other countries and international organizations
- managing, leadership and coordination entities and forces of protection and rescue in emergency situations
- other affairs and tasks of protection and rescue.

Protection and rescue include preventive and operational activities, actions and procedures for the protection and rescue of people, material and cultural goods, recovery etc. Preventive measures of protection and rescues contains establishing strategy of protection and rescue, assessment of risk and vulnerability of elementary disasters and other ones, measures during construction on earthquake area or objects (dam, warehouses, pumping stations, etc.) which can endanger people's lives and material goods, construction of embankments, marking places and assessment of the risks of avalanches, regulation of water flows, hail defense, crushing the ice on watercourses, construction of retaining walls, fire fighting measures, measures with which can be prevented explosion, uncontrolled releasing, effusion or dispersal harmful or hard chemicals, nucleus or radioactive materials, organizing system of observation, notifications and alert system, epidemiological, veterinary and other measures which prevent natural and technical accidents or relieves their effect.[3]

The protection and rescue forces include: staff for emergency situations, civil defense units, fire and rescue units, the police, the Serbian Army, subjects whose ordinary business protection and rescue, as well as companies and other legal persons, the Red Cross of Serbia. Mountain Rescue Service Serbia and associations that are trained and equipped to protect and rescue.[3]

The objects of protection and rescue include shelters and other protection facilities, warehouses, protective and rescue equipment and tools, equipment, training and training, vehicles, telecommunications and Alarm devices and other materials used for protection and rescue. While protection and rescue include preventive and operational activities, actions and procedures for the protection and rescue of people, material and cultural goods, recovery etc.

The principles of protection and rescue system are: the principle of the right to protection, the principle of solidarity, the principle of publicity, the principle of preventive care, the principle of responsibility, the principle of gradualism in the use of power and resources.

4.1 Protection and rescue plans

With this plan in emergency situations there are plans and preventive and operative measures for prevention and reduction consequences of natural disasters and other disasters, as well as power and resources of subjects of system of protection and rescue, their organized and coordinated engagement and action in emergency situations in order to protect and save people, material and cultural goods and security basic conditions for life.[5]

Content and way of protection and rescue plans are regulated with Regulation of content and method of preparation of the plan of protection and rescue in emergency situations, and at the level of the Republic of Serbia -National Plan, the administration authority social life - Plan, bodies of autonomous provinces, authorities of the local governments,

chambers companies and other legal entities. The plan contains the basic elements of protection and rescue in emergency situations:

- preparedness - Emergency Preparedness,,
- mobilization - activation in case of imminent threat or occurrence of an emergency situation,,
- protection and rescue by type of risk,
- measures and tasks of civil protection,
- surveillance, early warning, notification and alerting,
- the use of force for protection and rescue,
- reduction and elimination of consequences,
- informing the public.

Assessment of vulnerability of natural and other disasters is the basis on which the plan is created. Assessment to identify hazards, sources and forms of threats, possible effects and consequences, and perceived strengths and resources to respond to threats caused by natural disasters and other disasters, to protect and save lives and health of people, animals, material and cultural goods. All entities that are required to develop plans for protection and rescue are required to draw up assessment.[3]

In developing a national plan of protection and rescue in emergency situations cooperate Ministry and other organs in a part which refers to their scope of work, that their proposals are submitted to ministry, for preparation proposal of National plan of protection and rescue in emergency situations. Component part of National plan of protection and rescue is a Plan of protection and rescue in emergency situations of administrative district, which contains regional organizational unit of the heritage in administrative district.[5]

5. JURISDICTION OF STATE AUTHORITIES

Jurisdiction in area of protection and rescue have National Assembly, Government of Republic of Serbia, Ministry of Internal Affairs, Ministry of Defense of Republic of Serbia, autonomous province and local governments.

- National Assembly adopts National strategy of protection and rescue in emergency situations.
- While Government provides construction and development of system of protection and rescue in Republic of Serbia.
- Ministry of International Affairs recommends and implements politic in a question of protection and rescue, performs ratified international agreement, laws and other base acts of National Assembly and Government.
- In conditions when other forces and resources of protection and rescue are not enough for protection an rescue of people and material and cultural goods and environment from disasters caused by influence of elementary disasters and other disasters, Ministry of Defense provides participation of organizational parts of Ministry of Defense, commands, units and institutions of Serbian army for assisting help in protection and rescue in accordance to law. When units of Serbian army participate in protection and rescue they are commanded by their competence elders, in accordance with decisions by headquarters for emergency situations which manages and coordinates with protection and rescue.

- Autonomous province, brings decision about organization of civil protection on their territory, plans and determines sources of financing, creates headquarters for emergency situations, makes and brings Evaluation of vulnerability and Plan of protection and rescue in emergency situations, establishes cooperation on regions and assemblies.
- Units of local government bring decision about organization and function of civil protection on their territory, following the dangers, notify citizens about the dangers, provide telecommunication and information support for need of protection and rescue, etc.[5]

6. DEVELOPMENT OF CIVIL PROTECTION AFTER '90

By law about defense from 1993 is regulated in fifth chapter of civil protection, chapter is about Civil defense and protection. On that normative there are given some elements of civil protection, although is obvious that is ignored by this law organizationally-functionally realization and practical realization of experiences in civil protection function. That undermined existing system of civil protection. Part of equipment, personnel and resources taken over by Ministry of Internal Affairs and it has formed professional firefighting units, then it is formed within the Ministry of Internal Affairs, Administration fire police, which has grown in Administration for protection from fire and rescue, and then in Sector for protection and rescue. Meanwhile in the Ministry of defense was forming Directorate for emergency situation, Directorate of Emergency Situations is law follower of Ministry of Defense, whose jurisdiction are transferred in Federal Ministry of Defense in 1994 by decision from the federal government, and it becomes regional authority for defense in Republic of Serbia. Under that name had done the work by 2000 when it was renamed in Administration for Defense in Republic of Serbia. From 2005 is directly linked to minister of defense. At the end of 2007 Administration for defense of Republic of Serbia is becoming Administration for emergency situation. Such regulation of civil protection caused paralyzing system of protection and rescue, and had not created law conditions for establishing this system of protection and rescue. All of these disenabled proper functioning of civil protection in their priority engagement in protection and rescue in conditions elementary disasters and other disasters. The best example of inefficiency of civil protection is NATO aggression on Federal Republic of Yugoslavia in 1999.[1]

With the aim of forming a single emergency services in the Ministry of Interior, Government of 5 March 2009 adopted the decision to the competent ministry commit to establish an action plan for the establishment of a unified emergency services. The formation of such services has created the conditions for the establishment of an integrated system of protection and rescue, which includes all professional, human and material resources, with effective action in case of natural and other disasters. In its structure the sector for emergency situations include: Management of preventive, Management of fire-rescue units, the Directorate for managing risk, the Directorate for Civil Protection, the National Centre for Emergency Situations, the Department for Emergency Situations in Belgrade, Kragujevac, Nis and Novi Sad, Department for emergency Situations in Bor, Valjevo, Vranje, Jagodina, Kikinda, Pancevo, Sremska Mitrovica, Uzice, Sabac, Kraljevo, Leskovac, Novi Pazar, Pirot, Pozarevac Prokuplje, Cacak, Prijepolje, Smederevo, Subotica, Sombor, Zajecar and Zrenjanin .[2]

7. DISADVANTAGES SYSTEM OF PROTECTION AND RESCUE

With conducted analysis, which coverage area of emergency situations in Republic of Serbia and shown status of elementary situations and other situations of danger, document (annex) is given in which are recognized next disadvantages of existing system of protection and rescue:

institutional-organizing: non-existing conditions for consistently implementations of regulations; inadequate organization and implementation preventive measures; unavailability special cadastre, non-existing comprehensive maps of risks; uneven distribution of capacity of service for reaction on the territory of Republic of Serbia; not established system 112; non-existing methodology of managing with dangerous waste;

material-technical: unsatisfactory level of road traffic and other infrastructure; old and unreliable equipment, as well as resources and vehicle service for reaction in emergency situations; inadequately financing maintenance for system of protection and rescue; non-existing special vehicles and equipment for reacting in chemical crashes on the road, railway and river traffic; insufficient number of mobile eco-toxicological units;

cooperation, coordination and availability of information: insufficient coordination between subjects of system of protection and rescue in emergency situations; insufficient cooperation between science and research institutions and directly user of research; insufficient cooperation with non-government and private sector; need for advancement international cooperation;

human resources and education: inadequate professional qualifications and technical discipline of available human resources; lack of special cadres; insufficient training of special cadre; lack of preparation and low level of capacity from local self-government and undeveloped culture of prevention.[4]

In Republic of Serbia there is no unique number which citizens could call, every emergency has its own number and dispatch centre (192-police, 193-fire department, 194-ambulance), but their cooperation is not effective enough. Introducing number 112 for emergency calls will ensure coordination quickly and effectively, and will help due to elementary situations. [4]

8. "FLOODS IN MAY" AND THE EMERGENCY SITUATION IN THE REPUBLIC OF SERBIA

In May 2014, the Republic of Serbia was faced with a catastrophic floods, caused by heavy rainfall. The emergency was initially declared in five cities and 14 municipalities, and from May 15 to May 23 was in force throughout the territory of our country. Sector for Emergency Situations has engaged its entire lineup of fire and rescue units, all specialized rescue teams and work on the water, as well as the specialization of civil protection for the work on the water in the affected areas Police, Gendarmerie, Army of Serbia, the Red Cross of the Mountain Rescue Service have also made a great contribution in helping threatened. Evacuated and saved over 31 thousand people, and a large number of people left their homes after receiving information from the competent authorities of the need for evacuation. Only the most affected municipalities Obrenovac, more than 25 thousand people have been evacuated (Picture 1). Many were housed in

temporary shelters or with relatives or friends. A number of people returned to their homes, but many houses were still inappropriate for life.[6]



Picture 1. Floods in Obrenovac

Source: Sector for Emergency Situations, <http://prezentacije.mup.gov.rs/svs/2014-05-15-23.html>

Due to the flood, there was the large number of landslides, recorded them even 775 (Picture 2). Also, there was a short-term contamination of surface and groundwater. Soil analysis showed that the level of contamination heavy metals mostly below the maximum allowed value. The negative impact of floods on the environment is directly linked to human health. Significant occurrence and spread of the infection was gone, the competent authorities during the crisis react appropriately. It should also be noted that the lack of access or difficult access to the facilities of health care lasted only 2-4 days in all municipalities.[6]



Picture 2. A landslide caused by floods

Source: Sector for Emergency Situations, <http://prezentacije.mup.gov.rs/svs/2014-05-15-23.html>

9 CONCLUSION

Floods in May had a very strong negative impact on the security of the citizens of the Republic of Serbia. The negative effect applies not only to citizens who have been

directly affected by the floods, but also to those that are found in the wider territory of the Republic of Serbia. The institutions of the Republic of Serbia are directly confronted with the specific situation in accordance with their technical and financial capabilities. This experience has shown that climate change is caused by the effects of the individual states whose consequences are not able to cope. It turned out that not even at the regional level were not enough resources and equipment, but had to intervene teams from other geographical areas. This clearly shows that the system of civil defense and protection and rescue system should not be built so that only dealing with the consequences, but preventive action and take all to the causes in time detect and remove. Detailed analysis of this situation could provide accurate indicators that would show how much flooding due to natural circumstances or to what extent are the causes of a systemic nature. It would be good to get answers to questions regarding the responsibility of local governments taking into account their legal obligations, the impact of privatization on the condition of our coastal rivers, whether unplanned deforestation associated with the scope of the flood, which is the responsibility of urban planners and municipal inspections bearing in the form of construction of buildings close to the shore and converting channels in landfills, and to what extent citizens through institutions of the system trained to recognize danger and timely react when he comes to it.[7]

The system of protection and rescue in the beginning had its drawbacks, which are gradually eliminated by adopting bylaws in the area of emergency situation. The establishment of a new system of protection and rescue began in early 2010 and ends in 2015. Cooperation has been established between the Ministry of Internal Affairs and international entities in the form of exchange of experiences, different forms of education, courses and training, development of neighborhood programs, donation program etc. The current training system in the field of emergency situations needs to be modernized and improved by creating a plan and program for further development of acquired knowledge. By conducting training reduces the insufficient training of deployed forces to act in emergency situations. Also, it is encouraging non-governmental, non-profit organizations and citizens to education for treatment before, during and after emergencies, all contribute to the further development of integrated protection and rescue system. Also needed is a more technical innovations and equipping with modern technologies and standards of the European Union. The establishment of the Budget Fund for Emergency Government has provided additional funding for the preparation, implementation and development of programs. This allows the financing of projects that go beyond the regular allocation of funds.[4]

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GEOLOCATION-BASED SOCIAL NETWORKS AND MAPPING IN EMERGENCIES

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Abstract *The growth of geolocation-based social networks and mapping leads to more efficient gathering and dissemination of accurate information and rapid response in the most affected areas, which may significantly reduce damage in emergency situations. These services collect information that can serve as a major source of understanding dimensions of an emergency. In this paper, the use of geolocation-based social networks and services in emergency situations is discussed, because timely, accurate, and clear communication is the main prerequisite for a valid response to such conditions.*

Keywords *geolocation-based social networks, mapping, emergencies, communication*

1. INTRODUCTION

The widespread use and numerous possibilities offered by the Internet significantly affect modern societies. Given that we live in the information age, daily use of this platform can be reflected, apart on a private level of an individual user, in economics, politics, health, education, tourism, and many other fields. Therefore, it can be concluded that the role of the Internet is far reaching and immeasurable [8].

The application of Web 2.0 tools and technologies gives its users the opportunity to create and modify content - to actively participate in the creation of the Internet. In this way, the concepts underlying the communication, collaboration, and learning, are significantly transformed in today's society [6]. Through social networks such as Facebook, Twitter and YouTube, large amounts of information in the form of text, images and videos are exchanged on a daily level. It is believed that social networks are the basis of today's electronic communication and that they make the world more open and connected [14].

The paper is organized as follows - the key terms are defined in the second section and the statistics of social networks distribution in the world and in our country are presented. The third part deals with the influence of social networks in crisis situations, with special emphasis on geolocation-based networks and services. A commentary is given in the form of a conclusion.

2. DEFINITIONS, TYPES AND DISTRIBUTION OF SOCIAL NETWORKS

2.1. Defining social networks

In the literature, depending on the point of view, different definitions of social networks can be found:

Social networks are collection of Internet applications, platforms and media which enable collaboration between people, co-creation and sharing of content [7, 12].

The content users share on various websites and services that facilitate communication between them is called social media, and it is one of the main ways of social interaction in modern society [16].

Social networks can be defined as web-based services that allow its customers to create public or semi-public personal profiles and exchange messages with other users in the same system [5]. Although there is a difference, today the terms *social network* and *social networking* equate. Social network is characterized by social interaction between members of a group, while social networking is creating a connection between social networks [5].

To put it simply, the social networks are services through which we share content or search for information in our virtual environment.

2.2. Types of social networks

Social networks allow each individual to self-present, create, view and use lists of friends; to write comments on the friends' profiles, send private messages, share pictures, videos, and other multimedia content, enabling every user to actively participate in the content creation [9]. Social networks can be divided into several major categories, depending on their purpose and the content they promote (Figure 1):

social interaction (Facebook, Twitter, Google+),

multimedia sharing (YouTube, Instagram, Tumblr),

informative (doityourself.com, forbesstockpicking.com, hgtv.com),

professional (linkedin.com, classroom20.com, canonprofessionalphotographer.com),

educational (thestudentroom.com, themathforum.com, eLearners.com),

scientific (academia.edu, researchgate.net),

linked to a specific area (gardenweb.com, automotiveforums.com, sportspundit.com).

The foregoing illustrates that currently there are social networking sites for any area of interest - sports, photography, cooking, travel, etc. There are sites for photo sharing, video sharing, informing others about various activities, meeting new people and reconnecting with old friends [10].

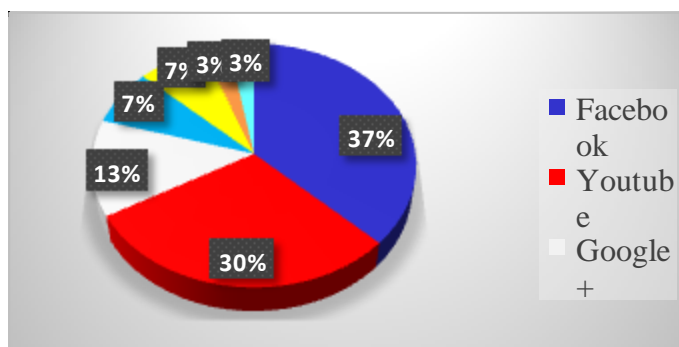


Figure 1. The most used social networks⁸⁹

⁸⁹ Available at <https://www.globalwebindex.net>

Furthermore, social media can be useful to build social authority, so that individuals or organizations can present themselves as experts within their fields of interest and globally.

As shown in Figure 1, the most popular are those which primary function is simple social interaction and media sharing. Some social networks include content of various types, and do not belong exclusively to one group only.

2.2.1. Facebook

Facebook was founded by Mark Zuckerberg in 2004. Today this social network has about 1.4 billion active users. In Serbia, the number of its users reaches about 3.5 million - 54% male and 46% female users (Figure 2).

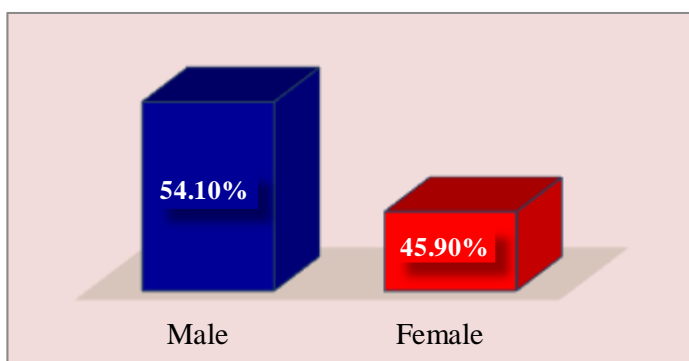


Figure 2. Facebook users in Serbia⁹⁰

In relation to population size, Serbia takes the seventh place in Europe by the number of Facebook users. The largest number of users, almost 50% of them, is under the age of 35 (Figure 3).

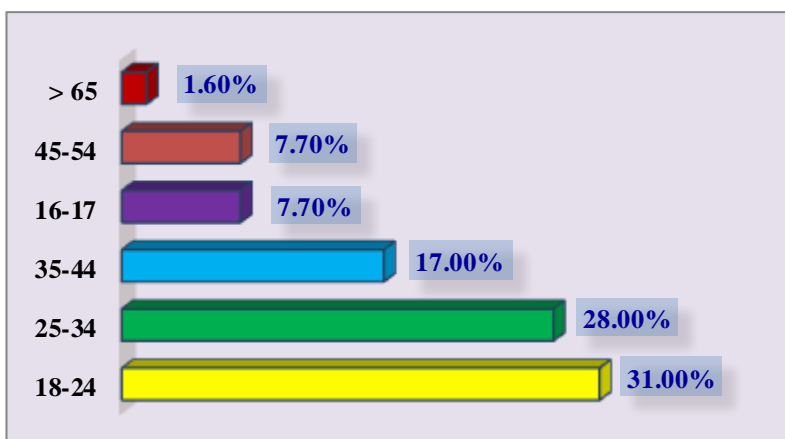


Figure 3. Age categories of Facebook users in Serbia⁹¹

⁹⁰ Available at <http://wearesocial.sg>, <http://www.socialbakers.com>

⁹¹ Retrieved from <http://wearesocial.sg>, <http://www.socialbakers.com>

Facebook is a social network based on a friendship model. Its users have a wide range of tools available, such as sharing an unlimited number of photos and videos. Due to its popularity and prevalence, many educational institutions have begun to use Facebook in education. A number of applications, profiles, fan pages, and groups are created, through which students among themselves and with their teachers are able to communicate, share ideas, opinions, experiences, etc.

2.2.2. Twitter

Twitter is a social network which was created by Jack Dorsey in 2006. To communicate users create messages called tweets. With over 200 million users, it is one of the most popular social networks after Facebook. The number of active Twitter users in Serbia is around 200 000. Statistics show that in relation to the population and the number of active users, Twitter is twice used in Serbia than in England.

One tweet is limited to 140 characters which is the length of the SMS message. Therefore Twitter is viewed as the SMS of the Internet. Twitter can also be used as a blog, so that tweets are visible to everyone. Twitter is considered to be a great platform for launching headlines.

2.2.3. Geolocation-based social networks and services

Geolocation technology, using data obtained from a computer or mobile device connected to the Internet, enables identification of the physical location of the device from which data is sent. Data obtained in this way are mainly used for purposes of geopositioning (identification of geographical location, e.g. using GPS), geocoding (link object's address on the map to its geographical coordinates), and geotagging (adding geographical data, e.g. adding a physical location to an object's photograph).

Geolocation-based social networks are primarily designed for mobile devices. Their most popular function is checking-in (users informing us on their current location) which is usually followed by sharing this information on Facebook or Twitter, too. Users can login via SMS text messages or applications that can be found on all popular platforms. Location is downloaded from the GPS hardware on a mobile device or from a network location provided by the application.

First geolocation-based social network that allowed its users to inform their friends of their location was Foursquare. Gowalla and location-based services within Facebook and Google are also popular.

Waze is a geolocation-based application designed and implemented by an Israeli company with the aim to improve informing drivers about road conditions in real time.

Waze has grown into much more and today it is a geosocial tool connecting 50 million users who report to each other about traffic conditions around the planet - people share useful information on where the traffic congestion is or where road works are. Thanks to the active involvement of its users, Waze has precise real-time maps.

3. SOCIAL NETWORKS IMPACT IN EMERGENCIES-GEOTAGGING AND MAPPING

In addition to their primary functions, social networks play an important role in assisting in disasters and in their prevention. They are also important in raising public awareness about the safety of vulnerable populations during disasters [11].

Social networks are used to track volunteers, to help family members connect, and for the dissemination of important information. Today there is a tendency towards using social networks in similar situations over the use of cell phones [2].

Newer forms of social media include mapping and geotagging, i.e. location tools. Location-based services - Ushahidi, OpenStreetMap and Google Map Maker are just a few of them used to mark crises and disasters.

Via text messages, e-mails, and various Internet services, these platforms receive large amounts of data and draw them on a map which can help in the rapid response to the most affected areas. Each platform is different - Ushahidi collects information from a group of people in order to map the information about a possible crisis, creating an interactive mapping project. OpenStreetMap uses existing satellite images and real digital map that can be modified subsequently [4].

These services, together with other social networks can provide information such as the location of the nearest hospital or volunteer points. They facilitate the coordination of the humanitarian aid distribution. Digital maps help volunteers by giving them information about the passable roads, the best routes to certain areas, and so on.

Social networks can be seen as a tool that helps in the very prediction of the possible occurrence of a crisis or an emergency situation; as means of communication during and after an emergency event. The integration of social media into communication plans in emergency situations should include the use of social networks during trainings and exercises of the first responders' organizations and others as well [3].

Each organization involved in the response to emergency situations should invest time, money, and manpower in the social media campaigns in order to systematically disseminate appropriate information [13].

In January 2010 a powerful earthquake with 7.0 magnitude on the Richter scale hit Haiti. The data indicate that the services in charge of response in emergencies and vulnerable people used social networks [15]. This event is an example of how mapping, as a digital tool, can be used in the phase of recovery and rehabilitation of the accident. OpenStreetMap collected information (satellite footage of unmarked areas) and create maps immediately after the quake. Precise information on the areas affected by the earthquake saved large number of vulnerable people. Ushahidi was focused on collecting data on volunteers' activities during the response to the emergency situation in Haiti.

Most people in Haiti at the time had access to mobile technology, and all the information that circulated through was supposed to be collected, labeled and translated from English, French, and Creole. Data collection and mapping, although time-consuming, significantly contributes to faster response in emergencies.

During the disaster that hit Japan on March 11 in 2011, when an earthquake measuring 9.0 magnitude on the Richter scale, followed by a tsunami and nuclear accident, led to huge losses in manpower and caused inestimable damage, the use of social networks played a key role in adequate response to the emergency situation. News and reports were spread faster via Facebook, Twitter and YouTube than through any traditional media [1]. Social networks contributed to raising awareness of victims and provided

assistance in locating missing persons through media such as the application that Google created - Google's Person Finder.

4. CONCLUSION

The paper discusses the application and impact of geolocation social networks and services in emergency situations. Given examples of best practice identify ways by which the relevant organizations and bodies responsible for emergency management should optimize their use during or after an emergency. From the above it can be concluded that it is essential to improve the use of social networks in this context in order to efficiently collect and disseminate accurate information in real time.

Due to the fact that social networks are growing at an exponential rate, future research should deal with their detailed analysis, especially with the geolocation services in disaster prevention, as they are of huge importance in the recovery and rehabilitation phase of an accident.

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CRISIS MODEL BEHAVIOR IN EMERGENCY SITUATIONS

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Abstract: *Emergencies are an introduction to crisis situations. Prevention planning can affect the outcome of events that cause emergencies. Since the crisis and emergencies involve a degree of uncertainty in developments, convenient way to plan actions is modeling behavior in case of emergency or crisis situations. This paper presents a model of principled behavior in different types of crises caused by the disaster.*

Keywords: *crisis situation, emergency, model behavior*

1. INTRODUCTION

Most of the dangers relating to crisis management is primarily manifested on the environment and are usually classified as technological and natural hazards. Natural hazards are extreme events that come from the natural environment, while technological risks arise from controlled processes of man (for example, factories, warehouses) but are transmitted through air and water. Natural Hazards are typically categorized as meteorological conditions, hydrological phenomena and geophysical phenomena. Major technological hazards are toxic chemicals, radiological and nuclear substances, flammable materials and explosives. For an understanding of the content it is necessary to remind you of certain accidents or disasters that can be caused due to: the functioning of nature (earthquakes, floods, forest fires, storms and landslides); action technology (industrial accidents which can be chemical and radioactive; transportation accidents involving hazardous substances: transports on roads and transport on rivers-sea transport aircraft, explosives and pouring oil); terrorist attacks (on critical infrastructure, particularly in telecommunication infrastructures, industrial facilities, including chemical complexes and cardiac facilities, transportation means on roads, rivers and sea-air; transport infrastructure such as ports, airports and railway stations and bombings chemical agents, biological including funds and other soft targets.

2. MODEL OF CRISIS BEHAVIOR IN NATURAL CRISES (RESOLUTION OF THE CRISIS)

Natural crises are appointed as the consequences resulting from the action of natural phenomena such as volcanoes, tornadoes, hurricanes, floods, tsunamis, mudslides, landslides, droughts, fires and through their actions destroy or threaten the destruction of the environment and people. Natural crisis is still named as " the will of the gods, " because they are mostly uncontrollable and fatal. There are many examples of natural disasters and accidents which had hit certain areas and parts of the world. As an example can serve the volcano Mount Pinatubo in the Philippines, who on April 2, 1990, after 600 years of sleep, kicked and forced the evacuation of 85,000 people. Also, on 17 January

1994. an earthquake measuring 6.6 degrees on the Richter scale hit Los Angeles and when it is destroyed parts of the two-story pet roads in Santa Monica. Similarly, the catastrophic earthquake on 17 January 1995 hit the Japanese city of Kobe. One of the best agencies dealing with models of crisis management is a US federal agencies (Federal Emergency Management Agency FEMA) proposes to resolve the crisis by natural amenities is composed of four parts:

- prevention - activities or to undertake measures of reducing harmful effects on human health and environment,
- Standby (readiness) - activities for the possibility of rapid response,
- response - activities carried out before, during and after crisis events with a view to reducing the consequences and
- Recovery - actions to stabilize the situation and restore.

The model attempts to describe the way people "usually" make decisions on the adoption of measures to protect against various types of risk. The stages within the protective action decision process is sequentially due to lack of information. However, few people follow each step in the model in the correct sequence listed in Figure 30. For example, extremely obtainable and directives to evacuate a certain area that is in danger, even if there was no explanation of why it was necessary to evacuate or are feasible, alternative methods of protection.

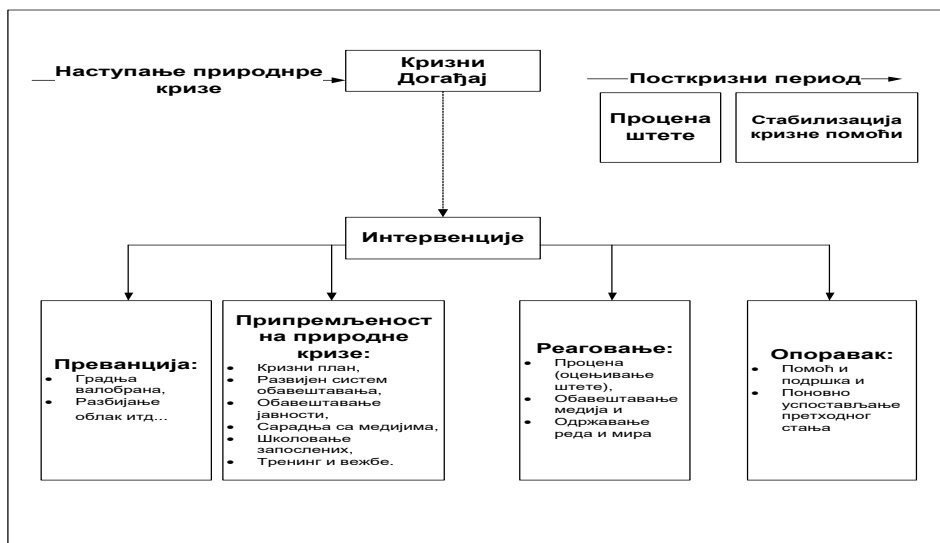
The way of dealing with such crises is shown schematically in Picture 1, which are clearly separated parts dismissal. Outdoor activities at each stage solution to the crisis are determined by the level of technical equipment of the organization and its financial possibilities. We should emphasize the importance of the existence of the contingency plans that are the basis for the organization's preparedness to cope with a crisis.

In the scheme have clearly shown certain activities that are carried out at certain stages of natural crises and fully reflect the nature of the occurrence and the consequences that entails.

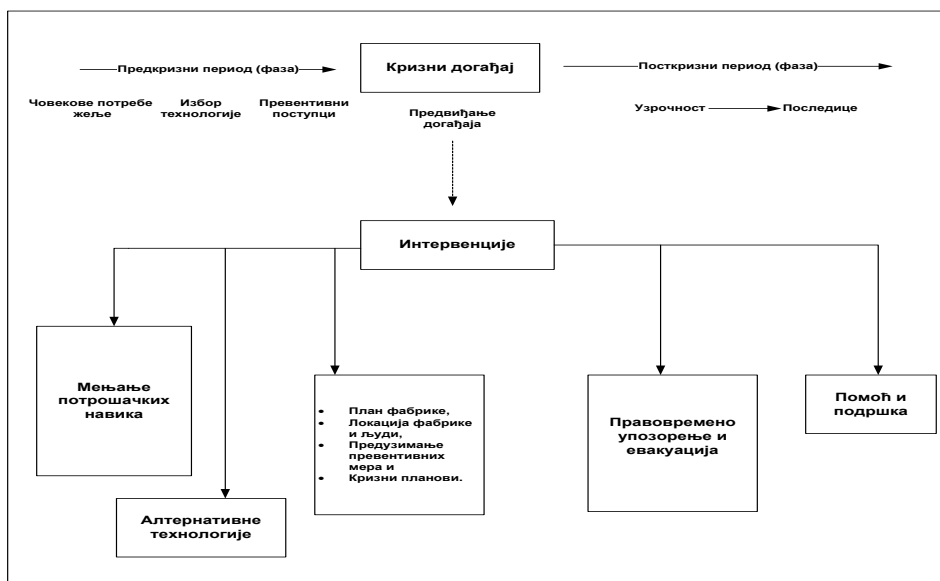
3. THE CODE OF CONDUCT IN TECHNOLOGICAL CRISES

In the conditions of modern society, in modern industrial period, which is characterized by the development of science and technology, increases the number of possible accidents or consequences of technological development as well as natural disasters or catastrophes. In such circumstances it is necessary to prepare the population and the environment for the consequences of any technological accidents. Especially, for illustration, the characteristic technological crisis that marked certain periods. There can be extracted disaster in Bhopal, India on December 3, 1984., The explosion of the spaceship Challenger on 28 January 1986., And the explosion at the Chernobyl nuclear power plant on 26 April 1986.

Model solving technological crisis is based on a model of natural crises. Their purpose is to inform the public about the accident, its causes and implementing or taking measures to control or reduce their consequences. Scheme model for solving technological crisis is shown in Picture 2.



Picture 1: Schematic representation of the model behavior in crisis situations in case of natural crises



Picture 2: Model of resolving the crisis caused by the technological operation

Here is a characteristic that there are three phases of technological crisis:

- The pre-crisis time (before the crisis phase), preventive action, the construction of the factory, location, construction plans, contingency plans, preventive measures, etc.,
- Prevention of crisis situations (Postponement of the flight the spaceship Challenger)

- Post-crisis time (post crisis phase), final warning, evacuation, protective equipment, help and support.

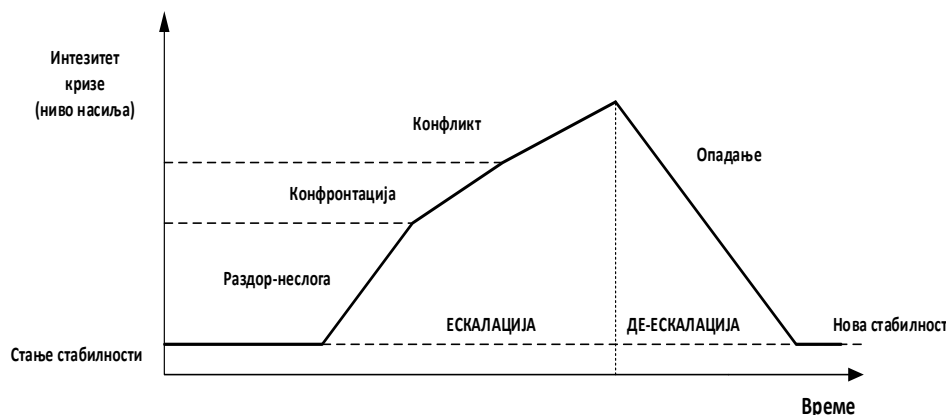
It should be noted the operation of another segment of the danger that can be caused by the action of people, and in particular are characteristic of biological hazards. According to the World Health Organization to highlight Michael K. Lindell, Carla S. Prater and Ronald W. Perry, " ... biological weapons is "that which achieve the desired target effects of the infection disease challenged microorganisms and other similar entities, including viruses, infectious nucleic acids, etc. ". Some biological agents produce toxins and, thus, actually chemical weapons with "chemical reactions on life processes [is] able to cause death, temporary incapacitation or permanent harm" Holders of crisis management needs to understand that most biological agents likely to be used in deliberate attacks or already exists as a natural disaster. Biological agents can be accidentally released from a fixed septic area (eg., Commercial or academic labs) or shipped within those facilities. These agents exist at low levels of prevalence in human populations or, alternatively, the animal species of which can spread to the human population. Indeed, one quarter of the world's deaths in 1998, was caused by infectious diseases. The main consequence of most biological agents is the maximization of their effects from the infection, unlike chemical agents that are usually experienced during the wastage of time and distance. Biological agents increase their multiplying effect within the target organisms, while chemical agents can not.

Countermeasures include the isolation of biological agents and quarantine. Isolation is an action to prevent suffering from contagion from infecting healthy people. Usually undergo special treatment in order to eliminate the disease. In contrast, the quarantine is used to prevent those who may have been exposed to biological agents but currently show no symptoms. However, it is extremely important to prevent infection. Thus, the quarantine is similar to the shelter of toxic chemical hazards. The difference is that you have people ask to stay in quarantine (or legal requirement) in order to protect themselves from other people (because they are dangerous), and not to protect themselves from external dangers.

Model the behavior in crises arising as a product of the social conflicts

From the point of considering the crisis and its manifestation, or watching the stages through which exerts its action in this context can be defined and models of action in a given stage. Common features of operations or processes carried out in the pre-crisis stage, are influenced by the type of crisis and the conditions in which it is expressed. The operation in the field of prevention includes activities that will provide such a state and the ability of the organization to be in activating the next phase of the crisis can be successfully confronted. The model of crisis management behavior in these conditions, when it comes primarily working angle, based on measurements of real and objective analysis of the form and degree of endangerment and possible consequences of the activity factors at this stage, which will take effect in the next phase of the crisis.

Prerequisites for the crisis and its performance at each stage, the elements of the crisis are shown in Picture 3.



Picture 3: The general form of crisis

The picture shows that at certain stages of the crisis, there are elements that characterized the pre-crisis stage stem and connected in a continuum in which lead to its culmination and the most points, regardless of whether this is a crisis in the system or the crisis caused by the operation of nature. However, it is important to distinguish the action in a specific situation where there is no developed system that would fully meet all the required criteria. There is obviously a general attitude that leads to the fact that, depending on the type of crisis, we will implement them and to engage specific resources. Define the concrete model of action is not possible, because in this case is triggered prepared plans for a specific situation. This means that the action plan, based on the model in a specific situation.

According to the views of modern armies, primarily NATO, approach or model of crisis management has elements shown in Figure 1. It is characterized by the existence of two stages which divides the culminating point, then phase of escalation and de escalation of the crisis.

In the phase of escalation, there are two phases of the development process of crisis-escalation phase, accompanied at certain points de escalation phase. This transition occurs in any form defining crisis of the process. What characterizes the phase of escalation and what is noticeable on the diagram as a 'steady state' 'is shown in the form of a crisis where there is no violence or threats of priority objectives. There is an absence of tensions between potential parties to the conflict.

The diagram can be moved upwards to 'dissent-divisive' 'indicating that the threat to priority objectives identified. It is characterized by the growth of the warning of the impending crisis.

Curve may progress to the point " confrontation ", indicating that the actions taken over the growth of violence from one side or the other in a crisis, showing that there is a crisis and, of course, be wrong to point to growing of the crisis up to the point where it turns into conflict.

De escalation phase is characterized by this kind of action intensity of the crisis that will eventually subside showing its flow in the diagram. Curve shows a decline passing through a phase of decline conflicting parties. It can include recognition that the threat of priority objectives in decline. This does not mean that the crisis is over, it is brought into a state of positive, but only indicates that the worst is over as a form of crisis. Curve

decreases to a relatively low intensity, pointing to chart 'a new stability' 'which may be a crisis of intensity higher or lower than the original, according to a new' status quo " that is acceptable to all parties involved in the crisis.

In such circumstances, resolution of the crisis, the position of crisis management is oriented towards the implementation of activities in terms of content shown in Table 1.

Table 1: Main activities of crisis management

The content of activities of crisis management	FORMS OF CRISIS					
	escalation				de-escalation	
	Stability	Discord	confrontation	Conflict	Decline	Stability
Situation monitoring	x	x	x	x	x	x
Support discovering crisis	x	x				
Content crisis		x	x	x	x	
Permitted engagement				x	x	x
Building stability					x	x

The situation monitoring as an activity that is carried out in the resolution of the crisis is characterized by the properties, expressed on an estimate of operating environments, principally on the collection and analysis of information. It is important for one simple reason, which has its stronghold in the process of deployment of forces and assess the risks of an operation. Information and analysis will ensure that the operational planning process for the engagement of forces conduct a complete and a decision that should ensure the success of the implementation of such operations. This segment is distinctive because it is done at all stages of the crisis and is directly related to the intelligence assessment of the battlefield, and that reflects the operational planning process. Support discovering crisis is directly related to the segment when the crisis is identified. Information in the function of supplementing the previous decision or decisions supplementing new information that will enable the successful implementation of the operation

In the phase of escalation of the crisis manifested certain forms of action and manifestations of such a condition. Most often they are expressed in the form of division, confrontation and conflict. In such situations, crisis management activities are focused on the development and implementation of concrete actions that lead to the prevention of the escalation of the crisis. Actions can be substantially different, primarily determined by the type of operation that is carried out.

Especially important it should be noted that at the stage of escalation, when there is a conflict, it is possible engagement forces of the Army. Simply, there is no reason for delaying the use of force or implementation of the operation, which leads the dismissal of such a situation. Use of power remains at the stage of de escalation, especially in the decline, which should lead to stability conditions.

The last significant activity on resolving the crisis relates to building stability and applies at the stage of de escalation as a natural consequence of continuously conducted prior contents. Are especially the development and implementation of new forms of post-crisis

stability.

To understand the essence of crisis management, it should be noted that the most common effects of crisis management occur where potential crisis is detected and where the treatment so before it became a crisis. In this case, the lines of communication are clear and the plan prepared in advance will prove to be effective. Management and organization without the crisis management system will in this case have inevitably to cope with an unexpected crisis, namely, will expect the unexpected, such specificity resulting from such a condition.

Where there is an unexpected crisis, provided bad or inevitable, it will quickly attract the attention of key people and media attention. In this case, the possibility of resolving the crisis will be expressed only in being happy circumstances or undertaking activities contingency decision. It should be noted that crisis management in situations of crisis resolution has four phases that are characteristic of such processing functions. Thought of as "four r" crisis management (Reduction - Reducer, Readiness - Speed, Response - Response, Recovery - Recovery).

Reduction as a phase or process activity crisis management characterized by identifying early warning signals about the possibility of a crisis. The key to crisis management is to identify potential crises and efforts to reduce its impact. Leaders should create inner strength of the organization, identify its weaknesses and external opportunities and threats. The essence of the reduction in the estimate of "shock" to the organization of a certain type of crisis and implementation of the plan in order to reduce the operation of the crisis.

Speed is a feature that is directly related to the preparation of the plan and its implementation in the case of solving the crisis. Every successful example of crisis management formed the precise execution of the operational plan and the superior management and communication objectives. Operational response saves lives and property. Communication response keeps the personality and work. Preparedness in direct operations and communications is essential.

"Be prepared" involves more than making a plan and launch occasional practicing. The organization must evaluate its own crisis exposure and develop a strategy of tactical and communication plans.

The answer is the practical execution of operational and communication plan in crisis situations. Management should regularly control plans, to monitor the exercise of crisis response and to continually improve the skills crisis. They have to be psychologically and physically prepared for the shock and stress which may cause crisis. Recovery is the last stage in the process of implementing the resolution of the crisis, which should return the organization to normal after the crisis. The effects of the crisis management system is constantly updated, and build the first two phases of preparation for the other two that represent practical system of crisis management.

4 CONCLUSION

Parameters crisis are determined depending on the objective circumstances that there are realistic in relation to the situation. Determination and evaluation of these parameters is quite a complex task. The difficulties are caused primarily by the fact that there is no necessary methodological basis, and in many cases insufficient understanding of the emergence of a crisis. For each type of crisis, these parameters are different in character.

Emergencies can be both a cause and a consequence of the crisis situations. U a certain sense, to logical linking these two concepts, crisis situation may be regarded as a development "to negative" certain types (or scale) of Emergency Situations, which poses a serious threat to the normal political and socio-economic life of the country or region. The unresolved crisis situation may be difficult, and it is the main long-term consequences for the country. In the case of development and resolving social conflicts, crisis situations can be caused by the military factors, and in its resolution of the use of military force may prove to be inevitable.

In practice, it is sometimes not only extremely difficult but also impossible to distinguish emergency and crisis situation. Determination crisis aggravates the phenomenon of social consciousness, which is mainly formed under the influence of mass media.

It should be noted another peculiarity crisis in relation to emergency situations. Extraordinary situation represents an accomplished event. It includes concrete actions, to the authorities, as well as each individual. Thereby, as a rule, a sense of tension, anticipation of events and their consequences go into the background. Conversely, a crisis, a crisis situation, creates a complex psychological tension among residents. It appears a lot of questions, doubts, and unfounded anxiety, all of which paralyzes the will of man and the limits of its possibilities for concrete action.

By pre-planning, based on models of crisis behavior, it is possible to prevent negative effects on the protected values or diminish the effect.

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SAFETY OF TRANSPORTATION OF CLASS 2 DANGEROUS GOODS IN ROAD TRANSPORT

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Abstract: During transport of any dangerous goods there could exist accidental situation due to various unforeseen circumstances, so that their transport needs to be organized by certain regulations so to make the risk of accidents minimal, and that in the event of an incident situation effects on environment are kept to a minimum level. Dangerous goods are transported as such mostly by means of road transport compared to other modes of transport. In order to organize safe transport of dangerous goods of Class 2 by road, and thus prevent unintended consequences, it is necessary to carry out their transport according regulations, which includes an adequate vehicle for cargo transport, proper insurance and arrangement of cargo inside vehicle etc.

Keywords: dangerous goods of Class 2, road transport, risk, safety.

1. INTRODUCTION

Hazardous substances are all substances which under certain conditions can not in any way endanger the lives and health of people and the environment. Because of this fact, their transportation must be organized so that the risk of accidents is minimized, and that the potential consequences of an accident are reduced to a minimum. Transport of dangerous goods by road requires the application of certain rules and procedures, in order to increase security and reduce the risk of accidents or endanger the lives and health of people and the environment. Adverse consequences for the rule arise due to publishing of substance (from the transmission of a court or packaging), and then its harmful effects, in proportion to the risk class to which it belongs (explosion, fire, toxic fumes, radiation, etc.). The risk in the transport of dangerous goods can be reduced if they take the necessary preventive measures, or if all participants in the transport requires maximum responsibility, with due respect to national legislation and international agreements in this field. The basis of safe transport lies in the identification and analysis of potential hazards, identification and classification of dangerous substances being transported, establishing requirements for vehicles carrying dangerous goods as well as the professional qualifications of persons involved in the manipulation of these materials during transport. In Montenegro, the transport of dangerous goods is regulated by the Transport of Hazardous Substances ("Off. Gazette of Montenegro" No.33 / 14) and the Agreement on the International Carriage of Dangerous Goods by 1957 years of ADR.

For the different needs of industrial and other plants used compressed and liquefied gases, the category of hazardous materials Class 2. In order to avoid when using a gas hazard, lays down specific rules that must be followed when working with them, as well as during their storage and transport.

2. HAZARDOUS SUBSTANCES CLASS 2

According to the classification of dangerous substances, Class 2 includes gases under pressure, liquid or dissolved under pressure. Class 2 is divided into the following groups [5]:

- Compressed gases: gases having a critical temperature below 20 ° C,
- Liquefied gases: gases which have critical temperature of 20 ° C and more,
- Deeply chilled and liquefied gases, and
- The gases dissolved under pressure (in a solvent).

The division of dangerous substances of Class 2, the chemical properties (hazards) is shown in Table 1. The labels with more letters hazards are specified in the order T, F, A, O, C Corrosive gases are considered to be toxic and are marked with TC, TFC and TOC.

Table 1. Classification of hazardous substances Class 2 according to the chemical properties [9]

Designation	Performance
A	noxious gases (gases that displace oxygen)
O	flammable
F	clear
T	toxic
TF	toxic, flammable
TC	toxic, corrosive
TFC	toxic, flammable, Corrosive
TOC	toxic, oxidizing, corrosive

The courts, which are used for packing material must be a Class 2 [6]:

- correct (and own the project budget)
- periodically tested and painted the appropriate color, and
- supplied with electric power with the safety equipment (safety valves, membranes, etc.).

For containers there must be visible marks and inscriptions necessary to identify how the Court and gas for which that court intended. According to the Law on Transport of Dangerous Goods ("Off. Gazette of Montenegro", no. 33/14) the participants in the transport, packaging and shipment of hazardous materials, which, according to the type and size of foreseeable dangers should take necessary preventive security measures to prevent cases damage, and for the damage done its volume as low as possible [8,11].

3. TRANSPORT OF DANGEROUS GOODS CLASS 2 IN BOTTLES

For the transport of gases in cylinders are used closed vehicles with a total weight does

not exceed 1000 kg with non-combustible gases, or 333 kg for combustible gases [6]. The loading of closed vehicles must have at least two openings, in order to ensure sufficient ventilation. The position of vents should be preferably diagonal, one in the floor, and the other at the top, and the surface of each hole should be at least 100 cm² [6]. The upper air vent can be a hole in the roof. If you use only the roof, he should unconditionally, to be placed diagonally to the lower vents, Figure 1.

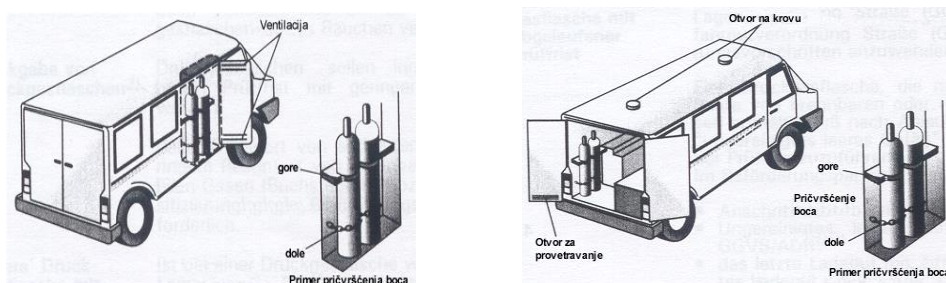


Figure 1. Set bottles and ventilation of vehicles [6]

Shipping bottles in a passenger vehicle should be done only in exceptional cases, for a short ride and taking into account the special precautions, given the ventilation and cargo insurance. Ventilation can be accomplished by opening the windows, switching the fan or opening a small trunk. The bottles must be loaded in a passenger vehicle just before the shipment and immediately after transporting them out. The bottles must be well attached, that would not be able to move during emergency braking when driving in curves. ONLY-sealing valves closed and the protection cylinder valve must be loaded and dispatched. Reducing valves must be after the end of the download. Provided nut to close the valve should be tightly screwed on. Smoking is forbidden during loading and in vehicles. Highly flammable cargo and bottles must not be found together in a car. During the seizure of gas eg. When working with the flame of a welding, cutting or soldering, the bottle should be kept outside the closed vehicle. This does not apply to special vehicles performed and additional security measures, such as, holding open the door and prepared the appropriate fire extinguishers.

It should pay special attention to the proper arrangement of safety devices against the return gas and reverse flame. With every change of the vehicle, as well as starting, acceleration and braking - and each change of direction, acting force charged. They can lead to individual bottles, as well as range and battery with tanks rolled over, bent, roll or fall. The forces are particularly high during emergency braking, a sudden maneuver and uneven carriageway [4].

Cargo insurance is therefore necessary, in order to prevent accidental situation. The person responsible for the shipping is required to take the necessary security measures. Insurance of cargo during transport is governed by the traffic and the Law on transport of dangerous goods [11]. Some parts of the load of dangerous goods must be arranged on the vehicle and secured by appropriate means that while driving cannot change the relative position or the position of the vehicle sides. If the load on the vehicle contains different types of goods, in this case the shipment of hazardous substances must be kept separate from other deliveries. All regulations regarding loading and unloading vehicles, stacking and handling of hazardous substances apply to container. Dangerous materials not be placed on the fragile shipments. Staff who drives or follows the vehicle is not

allowed to open the shipment of hazardous substances. A parcel includes pallets, batteries and individual bottles. Points on the body of the vehicle shall be so arranged that the forces for securing cargo can be downloaded. Auxiliaries and devices for securing the load can be made in different ways, arranged and attached depending on the type and application of the core of the transport vehicle.

3.1. Permitted payload and setting load

When loading vehicle, care should be taken not to exceed the permissible total weight with allowed axle load.

Platform vehicles on which is placed a burden it must have sufficient specific capacity. Since batteries and pallets must be safely transported, must be guaranteed by specific platform capacity of at least 1250 kg / m (Figure 2). This information should be indicated on the vehicle.

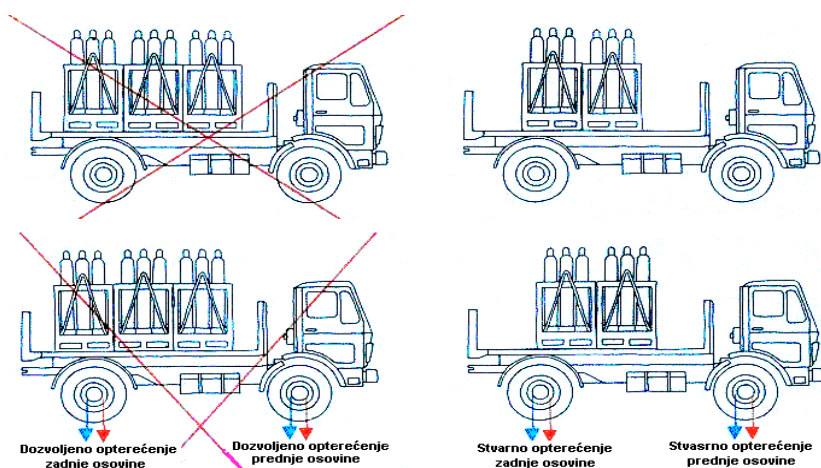


Figure 2. Capacity platform vehicles [6]

a. incorrect, actual load: $6 \times 1.5 = 7.2$ t

b. properly, the actual load: $4 \times 1.5 = 4.8$ t

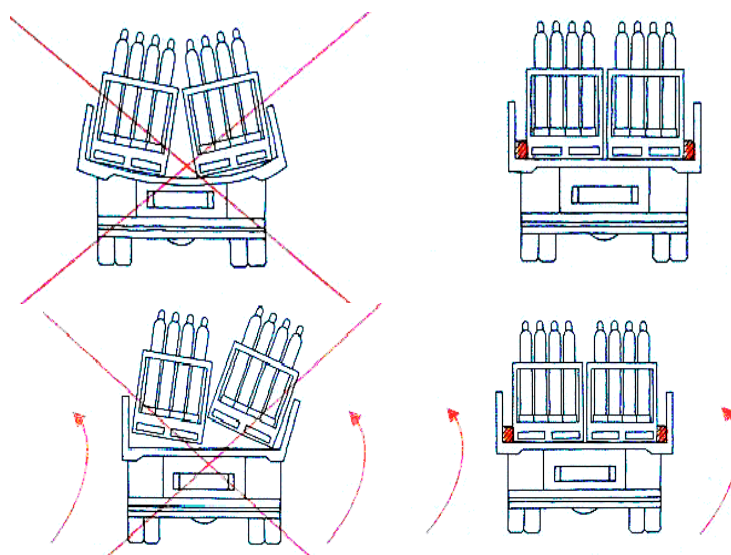


Figure 3. Cargo insurance on the vehicle body [6]

- a. $<1250 \text{ kg} / \text{m}^2$ wrong, load external side of the vehicle body
- b. $\geq 1250 \text{ kg} / \text{m}^2$ properly, the load is secured against overturning and tilt

The sides of the truck for serial furnishing have only limited ability to load. They are not sufficiently secured for example, batteries or range, figure 3. The maximum weight load of documents stems from accompanying vehicles. Also important is proper load distribution on the vehicle. Plan load distribution is obtained for each type of vehicle by the manufacturer. Figure 4 shows the load curve of the vehicle body that indicated the proper arrangement of the payload relative to the distance from the front side of the vehicle.

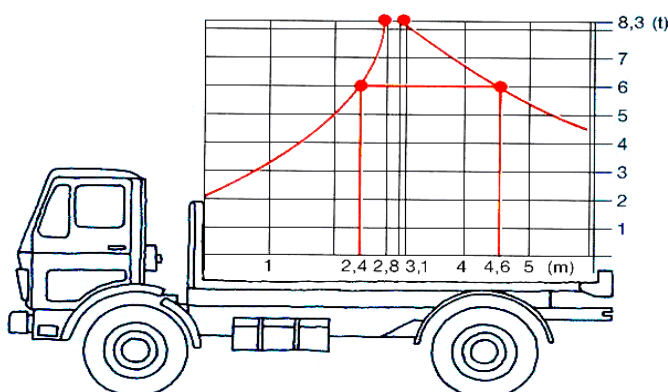


Figure 4. Regularly scheduled cargo vehicles with 16 tons of total capacity [6]

If the vehicle is unevenly loaded, did not exceed a rear axle load, but also the front axle dangerous relieved, as shown in Figure 5. In this case there is no longer complete safety driving.

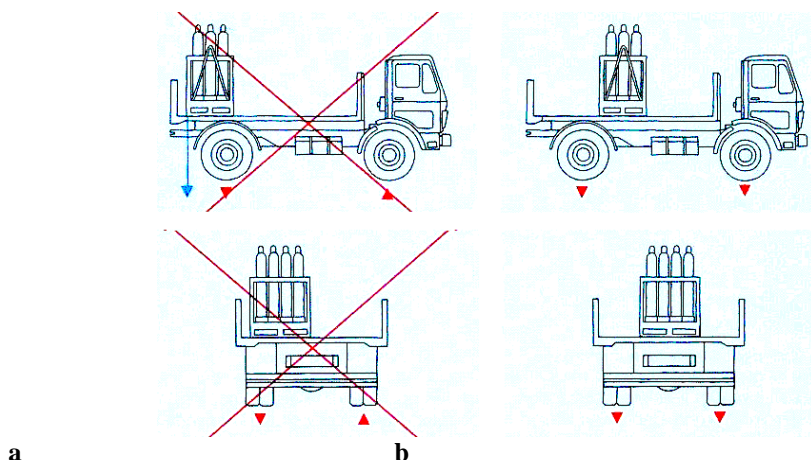


Figure 5. The weight of the vehicle [6]
a. uneven load cargo b. evenly load cargo

The payload of the vehicle should be properly loaded and secured so that it does not move while driving. Special requests strung have gas cylinders (Figure 6) as if they are set vertically, must be secured against tipping over to the frame. Packaging should be the vehicle is loaded correctly and attach [1].

Also, packages containing hazardous materials needs be protected by insurance, which is possible to keep the material in place (eg, security tapes, moldings, brackets) in vehicle or container so that the driving time prevent any shifting of the pack for which there could be defect and overturning. Move the package can be prevented so that the empty spaces filled with a protective material or to strengthen packages or tie. Packages may not be placed on top of each other if they are not designed for this purpose. The responsibility for ensuring packaging of movement is divided between the sender and the driver. The driver who daily carries the load to the finish line is directly exposed to the risk of inadequate packaging of loaded and placed in the vehicle [1].



Figure 6. The transport of gas bottles. The vehicle shop is marked empty orange plate (source: the author) [1].

3.2. Binding of load on vehicles

As a means of restraint used chains, cables, belts if possible hook with carbine fastener. When the diagonal attachment to the vehicle floor two corners appear, and this [6]: first angle occurs between the binding agent and the vehicle floor as the vertical angle; should be between 15 and 65 °, and the second corner appears as a horizontal angle of projection means for connecting to the floor of the vehicle and the longitudinal axis of the vehicle; should amount to between 6 and 55 °.

Fastening means for connecting to the floor of the vehicle, appropriate attachment points, the bands of Figure 7 should engage with the ring of the pallet trucks.

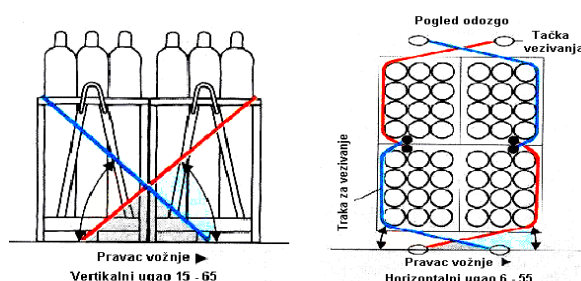


Figure 7. Appearance binding burden on the vehicle [6]

Means and devices for bonding during their implementation should be regularly for visible defects and eliminate the same. Tape binding, once during the year must be checked by certified institutions. Lashing points in the floor of the vehicle should be installed by a specialized institution. Lashing must correspond to the applied risers and to have capacity of at least 4000 kN [6].

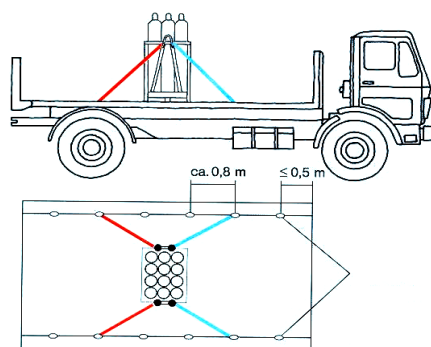


Figure 8. An example of tying one pallet / battery [6]

Vehicles involved in the transport of dangerous goods in Class 2 should be equipped with a sufficient number of points for attachment to the floor of the vehicle and must be careful regarding the axle load and the permissible total weight of the transport vehicle (Figures 8, 9 and 11). Subject to the legal norms of space-point harness on the floor should not be longer than 1.2 m [6].

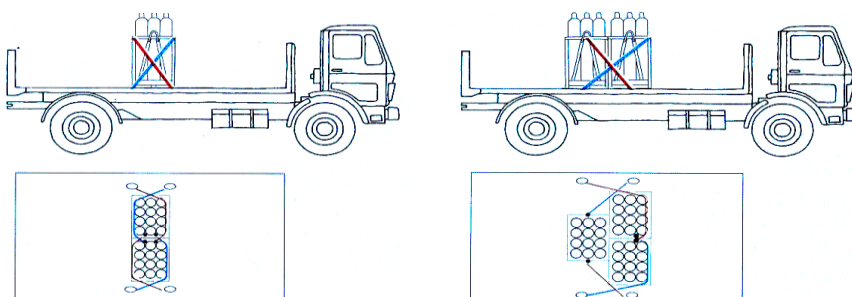


Figure 9. Example of binding two three pallets / battery [6]

In Montenegro, the implementation of the Law on Transport of Dangerous Goods ("Off. Gazette of Montenegro" No.33 / 14) to the migrants, as well as international transportation.

Transport of dangerous goods can only deal with companies and entrepreneurs whose business. For the transport of certain classes of hazardous materials is required to have a permit, and for each transport [2].

Permits contain all relevant information on the transport, such as the type and amount of cargo, vehicle registration number, the name of the driver and a companion, the route and the time when the transport carried out. Any change of any of these data must timely report to the body that issued the license, otherwise it loses its importance [2,11].

For substances of Class 2, 3, 4, 5, 8 and 9, no special permission, unless they do not have properties, which can be classified in classes 1, 6 or 7. Thus, for example, chlorine as a gas, placed in class 2 (gases), but since he was poisoned, to care requires a permit [2.11].



Figure 10. International Transport of Dangerous Goods [2]

Securing of cargo on vehicle

In order to meet the stringent requirements of legal norms, it is necessary to fulfill all the security measures for cargo insurance. The very weight of cargo on board, does not protect it from slipping or tipping over, and no additional insurance [6]:

burden can skate at high coefficients of friction between the platform and cargo, normal frontal and side of the vehicle body cannot provide sufficient protection, and herself standard equipment on the vehicle is not sufficient to fully secure the load.

In additional aids for securing loads on the vehicle include [6]:
strengthening the front page,
reinforced sides,
resistance of the connecting tubes (eg. Stapler frame instead of the side view),
midfielder hoists with risers, or cables,
connecting rails, along with berths risers, cables, closing or shipping,
physical connections (rings, hooks) fixed or movable, together with the connecting risers,
cables, closing or shipping,
anti-slip mats underneath and between cargo,
chains, wires, bonding tape,
wedges, spacers,
tightening fasteners, spindle ties,
base load, and
fillers (eg. Inflatable cushion).

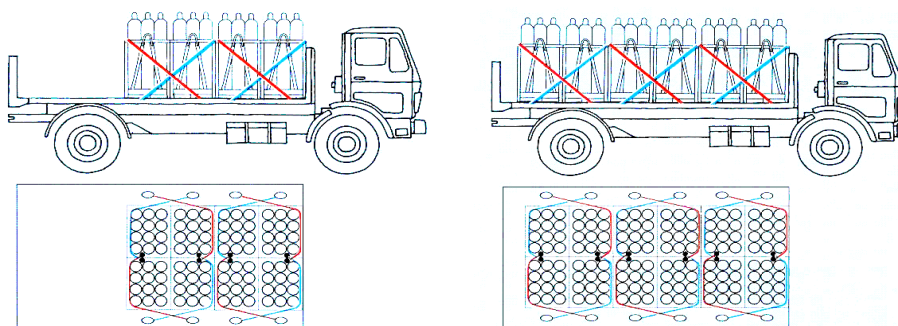


Figure 11. Example of tying eight twelve pallets / battery [6]

3.4. Ensuring individual bottles

When handling and transportation of bottles, for example, acetylene there are certain rules to be followed because there are specialized pallets for transporting bottles of acetylene, oxygen, carbon dioxide ... Pallets for acetylene must meet the following conditions [10]:

- must be metal because it requires greater capacity compared to a wooden pallet;
- must be upgraded to the sides that prevent the bottles and overturned;
- must be able to ensure bottle using a clamping mechanism;
- must have a loading ramp for the bottles manually loaded on a pallet.

In addition to the above properties the selected range have the ability to transport by forklift truck (Figure 12) and by crane (Figure 13) [10].



Figure 12. Transport using forklifts [10]



Figure13. Transportation by crane [10]

Also, just as in transport vehicles, compressed gas cylinders should not be disposed and should not be exposed to shocks. Avoid impact wall bottle on hard objects or sharp edges. The bottles must be placed on the vehicle so that they can not move, overturn or fall. The bottles of compressed gas must be loaded lying parallel or transversely to the direction of travel of the vehicle, near the front pages crosswise. Short bottles with a large diameter (about 30 cm or more) must be stored and longitudinally, but then a protective device valve (bottle caps) must be facing the center of the vehicle. Stable enough bottles and bottles in the appropriate devices (eg. Pallets) must be loaded vertically, Figure 10 bottles with "liquefied gas" should be transported in a standing position. The bottles of compressed gas have, if you do not rely directly or indirectly on the appropriate limits of space loading (eg. Shipping in bundles - battery), provided the consistent connections to the vehicle in a satisfactory manner. External positions have, although consistently rely on the sides, be further secured by couple against relegation when the side panel. Multilayer transport bottles of compressed gas is permitted only up to the edge of the side panels, if the side made for the loads generated when driving in curves [6].

In Montenegro, the part of the transport of dangerous goods by road transport is organized according to certain rules and so is the risk of accidents is minimal and the consequences already caused accidents are kept to a minimum.

Differences in individual requirements between ADR and our legislation there are and should be seen in order to avoid possible mistakes and misunderstandings in the transport of dangerous goods. As the problem is no longer stands out not updating our regulations. The last regulation on the transport of dangerous goods in the country was passed in 2014, and we know that alone ADR changed every two years in order to adapt to new requirements in the transport of dangerous goods, it is clear that the significant differences between national regulations and ADR , declined. This difference is reduced and no longer poses a major problem for all operators who deal with international transport of hazardous materials as well as for foreign carriers that transport hazardous materials through our country or in our country.

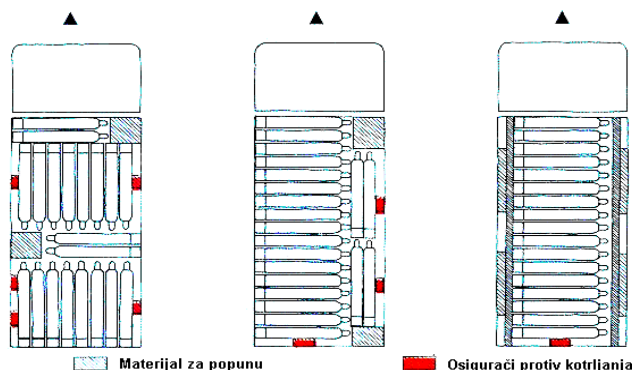


Figure 14. Example of insurance bottles during transport [6]

4. CONCLUSION

Transport of dangerous goods by road, is regulated by the ADR - international agreement on transport of dangerous goods by road, (European Agreement concerning the International Carriage of Dangerous Goods by Road) [1].

For the safe transport of dangerous goods of Class 2 is necessary to ensure proper packing, handling, loading, and respect for a number of procedures just before transport, such as cargo insurance, permitted gross payload and axle load being to be observed specific plan load distribution that is appropriate for the vehicle that transports.

The gases are usually shipped in bottles which have been properly marked, controlled before, during and after filling. When transporting the bottles must be well attached with and have closed valves with protection valve. In addition to a number of risks such as the risk of rolling over, the risk of leakage emissions of hazardous substances and the risk of fire so that the purpose of prevention of all plant and the factory must have a fire equipment, and all employees must be familiar with procedures in case of fire. Presuppose that smoking and use of open flames is strictly prohibited.

Bottles filled with oxygen or combustible gases must not be transported with easily flammable substances. Bottles with liquid fuel gases (propane, butane, propylene ...) must be transported in a standing position. A vehicle carrying hazardous materials must be marked on the front and back of the orange warning plates with each side of the vehicle must have a label with the name of the dangerous substance that is located inside as well as certain specific danger of the substance. The simplest form of transport is the transport of bottles and the most complex and expensive transport with cisterns.

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STRATEGIC PLANNING OF PROTECTION AND RESCUE

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Abstract: Protection and rescue is an area of social action which has importance for the overall social security. From the aspect of state, this activity should be arranged so that there is maximum control and influence over the system of state organs. The system of protection and rescue may be arranged centralized, decentralized and combined. Each of the listed organizations have advantages and disadvantages. The fact is that the consequences of natural disasters and other disasters first experience on the territory of local government, so that right there should develop strengths and resources that can be used quickly and efficiently. Since the local government units, very often there is no capacity to respond to natural disasters and other disasters, the necessary planning for protection and rescue at the strategic level down to level Local government in order to ensure a unified system of protection and rescue.

Key words: system, protection and rescue strategy, planning, prevision

1. INTRODUCTION

The last two centuries are time intensive progress of human society in the technical and technological, economic and demographic terms. Such progress led many theoreticians and practitioners to doubt and questions whether such progress is positive, what his effects are and whether it makes sense. The reason for this is realistic and based on observation of the fact that along with the progress of increase and develop dangers that threaten security and destruction of the values of human society. The world is sharply divided on the subject (man) and the object (nature, society, technology). Philosophy postulates of the unity of man and nature are forgotten and lost meaning. The man reached for the complete mastery and heartless exploitation of nature, the environment, and another man, with the intention to do so and with the universe. Nature process is very important and consequences of which remain due to the effects of natural disasters. In many cases, natural disasters caused by technical and technological accidents, create a domino effect with huge negative consequences for the protected values.

These conditions of development and progress of human society shows that it is increasingly vulnerable. The vulnerability is reflected in the different examples: the increasing number of devastating natural events, poverty, increasing material damage and human losses, etc.

This state security companies with huge number of dangers and risks in all variations, does not mean that the man stumbled and gave up to bad fate. On the contrary, man becomes aware of the existence of danger, their presence and destructive capabilities, and reconciled with the fact that he must live in a society where risks are immanent phenomena. The fact that these are still in danger permanently increase and accumulate capacities which can seriously harm human society to extinction, is a crucial issue of

human security. Human security is more than ever directly related to the ability of the community to react to danger. Equal the importance of studying, monitoring and preparing for potential hazards at the state and local level. Particular importance has the strategic planning of protection and rescue in terms of creating conditions for the development of protection and rescue system. The purpose of a strategic plan is to integrate and synchronize the science and practice, as well as the basic pillars of the development of protection and rescue system.

Aware of these facts, man putting science in the foreground examines the causes of the danger and takes measures to reduce or neutralize their effects. Just complete awareness of the hazards, the circumstances under which they were created, causes and ways of manifesting his power and effective development planning capabilities of social community, can effectively respond to the destructive action of natural and other disasters

Beck's "Risk society", warns of the need for supranational startegijskim dimensioning the protection and rescue of globalization and the capacity of countries to respond to the threat on its territory but also to support the neighboring and distant, territories.

2. CONCEPT OF STRATEGY

The phrase "emergency" includes a whole range of potential hazards in the circumstances require vigorous, planned and directed the operation of forces and means, to the consequences of their actions specie, remove or maintained within acceptable limits. The scope and consequences of the phenomena and events, which are covered by emergencies, are the characteristics that show their trans-national dimension. In territorially sense, an accident in many cases are not limited by national borders or affecting the largest part of the territory of a state. This fact points to the need for observation emergencies at the strategic level.

The strategy represents the culmination of intellectual understanding of a particular problem in symbiosis other phenomena and problems. Although initially interpreted as guidance the army, in the modern interpretation is given, the wider framework in which there are also other phenomena characteristic of contemporary society. The essence of the strategy is to compose a comprehensive intellectual knowledge, which is expressed in terms of its systematic approach sistematičnošću to differ significantly from rational empirical abstraction [2]. The field of protection and rescue represents, in terms of quantity, the problem in terms of elements of the state security and the human security, which is necessary to approach at startegijskom level. [5] The strategic reality of a state is made up of a spectrum of internal and external relations, events and occurrences. Within the strategic elements of reality in state level, there is protection and rescue area that requires strategic observation and dimensioning, in order to understand and dismissal of relations between all the factors that detereminišu.

Strategic observation problem is inherent to the state, as an entity that has autonomy in organizing various activities in order to achieve security. The state, through the strategic aspect, opinions and management, seeks to establish opinions on the approach to solving one or complex problems, in order to fusion of scientific and practical knowledge, abilities and needs. In order to achieve the strategic objectives of action in any field of state organizations, the state in defining various specific and a general strategy aimed at

highlighting something that is important, full meaning, multidimensional and long effective [2].

2.1. STATE STRATEGY

The state strategy is the highest act that a State determines thoughtful understanding certain programming standpoint, which includes certain forces and means to protect the highest state values. It focuses on the expression of state functions in certain areas of social life to achieve the highest state of protection and value. The State Strategy must not be based solely on empirical understanding of reality, ignoring the scientific knowledge. Science must be the basis of defining and developing strategies of the state. Essentially, as a set of mental and practical objectives, strategies states must ensure the long-term vision, development and protection of the highest national objectives. To refine and strategic of observation different areas of social development state strategy is divided according to different criteria, but they are certainly covered the following areas: foreign policy, military industry, civil industry, the economy and finance, etc. [2]

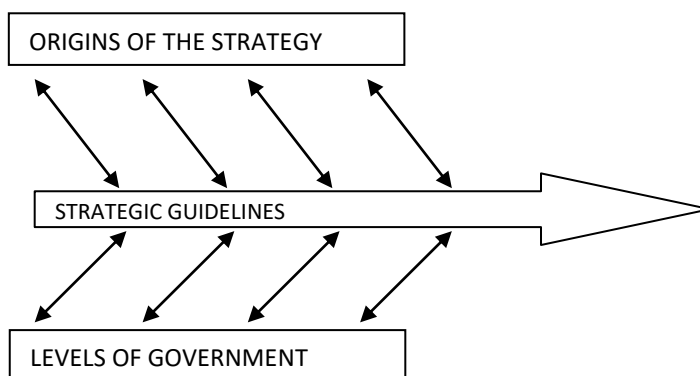


Figure 1. The effect of the strategy
Source: Processing of author

The state strategy has to define the origin, which paves the way of development thinking and programming point of view, aimed at the overall development of society. Origins of the strategy states: strategic environment, the level of threat to state security, political and legal system, economic power, technological development, geopolitical location, demographic characteristics, traditions of the people and the state, national values, etc. [2].

2.2. SPECIFIC STRATEGIES

Bearing in mind the importance of defining government functions essential for the development and functioning of the state apparatus, basic goal of the national strategy is

to differentiate areas where these functions are exercised in order to protect the highest state values. On state and national values are based on national interests. National interests represent the unity of the elements underlying the basic needs of a nation or state, including self-preservation, national integrity, economic security and military security.

It is the state's definition of national interests, will determine the path of development of the state and specific strategies.

Specific strategies are intended to more precisely define the ways and directions of development of areas that are consider. As subsystems of a national strategy, specific strategies are defined on the basis of a national strategy, fully synchronized to each other. The security functions of the state are, among other functions, a very important function, which has a very complex structure. Namely, it is difficult to tell whether the economy is more important, technology or security, but the fact is that security is an area upon which all other areas. Bearing this in mind, it can be concluded that the security functions of the state among the top priorities of government organizations.

Landscaping and routing of the road of the security functions of the state can be consider internally and externally, with the proviso that it is difficult to determine the factors that are strictly internal or strictly external. Equally important is the external security and internal security. If we observe the security feature according to the criteria frequency of occurrence that might jeopardize the safety of society, then it can give priority of internal security.

Special strategies of a national strategy, based on the strategy of national security, determine the directions and goals of the security functions of the state independently and in relation to other special strategies.

3. STATES STRATEGIC DOCUMENT

Concretization of national objectives in terms of security is done through strategic documents state. The quality and sustainability of strategic documents should be resistable for any changes, to internally and externally. Strategic thinking is not the phrase itself, but represents a combination of vision development and the protection of national goals with practical solutions and options. The fact is that the state organization permanently exercise some influence different phenomena of different character, depending on time and space. In such circumstances, it is a real challenge for the state, to define the strategic directions of development for a longer period of time.

The security functions of the state, in modern times, got a new dimension. In fact, safety is, in the very recent past, it was only related to the state. However, various conflicts and disasters around the world have shown that the state is unable to provide permanent presence of its security features. In fact, at war or occurrence of various natural and technical and technological disasters, a large number of people are killed, and in different time intervals no immediate government response. This situation has raised the issue of human security as a very broad category.

Strategic national security document creating the framework for generating programming, legal, political and other solutions and materialization of development and the protection of national values.

3.1. The National Security Strategy

The term security in context of state and social security means the status of the state in which there is protection of the state and the nation from all forms of armed and unarmed endangerment, as well as creation of favorable conditions for the implementation and development of national interest. Multidimensions of security in the modern world complicate its realistic analysis and definition. The fact is that the country remains an essential factor in the security of its citizens in all conditions. Security companies, is more related to the identity of the community, and has a very wide range of impacts from inside and outside. State security and social security are compatible, immanent, but Social Security may be compromised when national security is not compromised.

National security is an objective state of the nation and the state, measures and activities of state bodies and institutions that are planning undertaken for the protection of national interests in the field of foreign and domestic politics, economy, defense, culture, and other fields. Thus, the security interests of the state are the highest commitment of the authorities that are concerned with the protection of national interests, building and maintaining the reputation of the country. The security interests of the country represent an important orientation of the country towards the creation of conditions for development of other areas of social development and the state. Ensuring the realization of preserving security interests is realized through defining security goals, which are defined all the subjects of a state. [2]

The safety aspect of the national security strategy depends on several factors. For the purpose of this paper is a separated factor, the degree of vulnerability of society, and security challenges, risks and threats.

A basic document for defining a national security strategy is a national strategy. The guidelines given in the national strategy, in terms of security, operationalized the strategy of national security. Therefore, the strategy of national security is a fundamental document at the highest level; define the basic principles of building long-term development and national security. Substantially speaking, the national security strategy includes the following elements: security environment, challenges, risks and threats to security, national security interests, national security policy in different areas of social life and the national security system. [2]

Each of these contents national security strategy must be sufficiently general, but also specific enough to allow further implementation of strategies such document. Operationalization of the national security strategy is carried out through a separate strategy, security policy, and different doctrines to legislation.

The National Security Strategy must present the existing security situation, state of nation, and to anticipate scenarios of security conditions in the future. Quality prediction will condition and time intervals during which it is necessary to modify or adapt the strategic orientation.

Non-military challenges, risks and threats, are of interest in terms of subject matter of this paper. This group of threats included natural disasters and other technical and technological accidents. Their frequency and representation in the modern world is much bigger than the war. According to some statisticians, damage caused by natural disasters and other disasters, overcome some war damage.

Overall complexity of national security requires the involvement of various factors and forces in its implementation and development. If you look only at the segment of internal

security breaches caused by natural and other disasters, is easy to perceive that it is necessary to engage civil protection units, health centers, utilities, military units, etc. The materialization and operationalization of national security is done through a system of national security.

3.2 Defence Strategy

The defense system is a subsystem of the national security system. Practical solutions defense system varies between countries, but certainly one of the most important national security system. In many countries, the defense system consists of a control system, military system, a system of civil defense and protection, intelligence and logistics systems.

Guidelines and policy development of defense system is regulated by defence strategies. Modern democratic societies through the defense strategy reflect the generally accepted standards of the defense organization of modern societies. [2] Given that the construction and preservation of security and stability, is one of the highest defense interests of the state, it can be concluded that security is an essential assumption of a free and democratic development of society.

For the purposes of this paper a defense strategy, as a strategic document in the field of defense, occupies an important place because it looks at aspects of civil defense. Namely, in conditions of war, but also the conditions of peace, when the safety compromised by natural disasters and other disasters, there are significant country capacity defense system. In modern states, the defense system is not dimensioned only for the conduct of military operations, but also for the help and support of civil authorities in the event of non-military challenges, risks and threats. On the other hand, the defense system, enabling rapid and efficient manning of civil protection required specialties. The forces of the defense system are usually placed under the command headquarters for emergency situations, for effective use of the assistance and support due to natural disasters and other catastrophes.

3.3 Protection and Rescue Strategy

Protection and rescue strategy represents a subsystem of national security strategy. It is intended to define the guidelines and directions of development of protection and rescue system in the long-term framework. Protection and rescue is one of the top security priorities of the state. [1] The attitude is result of the fact that emergency situations brought enormous damage, losses of human lives and material destruction.

The strategic guidelines for protection and rescue at the national level are defined guidelines from “Sendai” framework, and should enable the following principles:

1. The State has the primary responsibility to prevent and reduce the risk of disaster in their territory, but also through international, regional, sub-regional, cross-border and bilateral cooperation.
2. Reducing disaster risk is a common concern of all government entities, not just the departments responsible for emergency situations.
3. The degree of improvement and implementation of national policy actions and measures for disaster risk reduction in the context of their circumstances and abilities can be improved through continuous international cooperation;

4. Preparation for the protection and rescue should be a priority of state authorities, and preparatory activities must involve all operators in the territory;
 5. Protection and rescue should be directed in terms of development;
 6. The Strategy defines the responsibilities of all levels of government in relation to the protection and rescue;
 7. Particular importance is given to local self-government with guidelines for achieving the capability for protection and rescue;
 8. Strategic approach must be multidisciplinary, and oriented to look at the “portfolio” of potential hazards;
 9. The aim of the guidelines of the strategy of protection and rescue must be the development of a system after a disaster occurs, to create a more efficient system than the previous one;
 10. Strategy for protection and rescue must potency vulnerability assessment as a basic document for the system of protection and rescue;
- Taking into account international guidelines for disaster risk reduction (Sendai framework 2015-2030) [13], protection and rescue strategy at the national level should define several priorities for the development of the system:

1. Understanding of disaster risk - risks of catastrophe immanent development of society. Increasing technological development and increase the risk of disasters, and the capacity of society for protection remain unchanged or decrease. In a number of cases is thought to be the dangers of natural disasters and other disasters are concerned only with professional services. This situation contributes to the fact that the knowledge about potential hazards and ability to react in the event of danger, at a very low level. In order to increase the capacity of society to reduce the risk of natural disasters and other disasters, it is necessary to develop and raise the awareness of all stakeholders of society on the necessity of knowing the cause of prospective hazards, their consequences and ways of acting on their prevention or reduction. Awareness of the dangers in parallel must be developed in the subjects to the authorities, the departments that are in regular activities in the protection and rescue, as well as people who live in the territory.

2. Strengthening the management of disaster risks in order to manage disaster risks - efficient and effective disaster risk management depends entirely on the quality of protection and rescue system. The system of protection and rescue podarzumeva existence vision system performance and power resources management system and koorodinacije, legislation, crafted vulnerability assessment and plan of protection and rescue, etc. The development of all elements of the system is necessary because it develops the capacity of the community, develop cooperation and coordination between all actors and system development is oriented towards enhancing solutions for prevention and response to the scale of the scientific and practical achievements.

3. Investing in disaster risk reduction to strengthen resistance - quality and speed of development of protection and rescue system is directly conditioned by the amount of funds allocated for the financing of the system. Funds can be provided in different ways, from the budget, various government funds, private investment, etc. Public and private investment in the protection and rescue system, aimed at the prevention and disaster risk reduction, through structural and non-structural measures are essential for strengthening the capacity of the community in relation to hazards. Their essence is to launch a long-

term innovation, securing economic growth and job creation. Such measures are cost-effective and lead to the development of conditions to save lives, prevent and reduce losses and to ensure the efficient recovery and rehabilitation.

4. **Improving** preparedness for disasters in order to effectively respond and "build a better system than before the disaster" during the reconstruction, rehabilitation and reconstruction - Constant increase the risk of disasters, including the increased exposure of people and assets, combined with lessons learned from previous disasters, suggesting the need for further strengthening preparedness for response in case of disaster, action in anticipation of the event, integrating disaster risk reduction and preparedness response, as well as the development of capacity at all levels to effective response and recovery. Particular attention should be paid to vulnerable social groups: patients, persons with disabilities, children, the elderly, etc. Disasters have shown that the phase response, rehabilitation and reconstruction, which should be prepared before the disaster, is a key moment to build a better system than it was before the disaster, including the integration process of disaster risk reduction in the future development measures.

Performance and quality of implementation of the strategic guidelines, defined in the Strategy for Protection and Rescue, also depends on the willingness of the community to face reality. Full and unequivocal assessment of the security situation of the community, promoting the necessity of the participation of all stakeholders in the system development and quality regulatory framework are prerequisites for raising the capacity of local communities and the state of readiness and response in case of disaster. Protection and rescue strategy is operationalized through a plan to reduce risk at all levels of governance.

4. PROTECTION AND RESCUE PLANNING AT THE STRATEGIC LEVEL

The organized and coordinated use of forces and means of protection and rescue requires planning. Protection and rescue system has its own policy is defined in protection and rescue strategy, which meaningfulness so accurately reflect the reasons for the existence of the system and its development. Organizing such a system of protection and rescue, implies the existence of management processes and basic functions of the System process: planning, organization, management and control.

The planning process is the initial process in which the process of fusion of the real needs with the objectives to be achieved. Define the objectives that the system needs to accomplish. By defining objectives, establishing the strategy of their implementation and integration and at the end of the process made plans as a document which verifies and all materialize.

4.1. Concept and Types of Planning

Planning, generally speaking, involves defining the organization's objectives and the establishment of a comprehensive strategy for achieving those goals and making plans to integrate and coordinate organizational activities. [3] Planning is a function of the organization, which is very closely connected with all other management functions.

Planning is a management function which is executed by performing a number of different activities. For this reason, the planning process is seen as the execution of activities that are necessary for making planning decisions, or decisions about the organization's goals and requirements for their implementation. [4] From the aspect, protection and rescue system are important planning two categories: strategic and operational. Given that the activities carried out in the system of protection and rescue, complex and always imply serious consequences, it is impossible to separate these two categories of planning.

Strategic planning is, continuous, iterative process aimed at ensuring compliance of the organization with its environment. The essence of strategic planning is to ensure the organization of timely reaction to changes in the environment. Protection and rescue system is dimensioned to monitor changes in the security environment of the subject of protection and rescue at various levels of management, so it is necessary to provide information on the state of the environment, information on the status of capacity for response and information to the assessment of the development of the situation. [2]

Operational planning is the strategic transformation of ideas and commitments into concrete actions the organization.

The specificity of the interdependence of the types of planning activities for protection and rescue resulting from the fact that each operational activity is of major importance for strategic level planning and management. In fact, even the slightest appearance of certain dangers may be a signal that announces higher opasnost, which may include a greater part of the community and the territory. Information obtained at the operational level, including the tactical level, the route through the operational, are of great importance for correcting initial plans. Initial or prevention plans are made based on certain assumptions and scenarios, which are hypothetical character, based on specific empirical indicators, which gives them a degree of subjectivity. The level of subjectivity is the difference between the planned and actual state of events, and this difference requires an analysis of the relevant Committee and decision-making and planning for the use of forces and means. [11] [12]

The principles that characterize the strategic planning are contained in the following:

Strategic planning must consider both internal and external environment;

Strategic planning is the future protection and rescue system basic orientation;

Through the identification of new targets, strategic planning is developing a "living organism" and permanently defines the duties of operational planning;

Defining the objectives relating to all aspects of protection and rescue;

Getting to valid information and conclusions for decision-making is in the strategic planning of a complex process.

These principles clearly show the complexity of strategic planning and its importance for the long-term development of protection and rescue. Long-term goals of protection and rescue system must derive from high vulnerability assessment of the subject of natural disasters and other catastrophes.

4.2. Vulnerability Assessment of Natural and Other Disasters

Vulnerability assessment is a systematic approach to reviewing and analyzing the factors that affect the security of the protected value of the entity. Analysis of vulnerability includes theoretical and empirical data concerning the impact of the hazard on the individual structures at national and local level and in the environment [1].

Vulnerability assessment is a basic document for the development of protection and rescue plans of different levels and brings up for municipalities, cities, districts, provinces and the country as a whole [3]. Assessment aims to analyze all issues related to the development of plans for protection and rescue from natural and other disasters as follows:

- Risks or conditions that may lead to an accident in the territory of which he builds vulnerability assessment, as well as the environment;
- The consequences that could arise from emergency situations;
- Determining the appropriate organization of protection and rescue in order to prevent the occurrence of accidents or rescue people, material and cultural goods;

Assessment of needs and opportunities in the provision of human and material resources for the realization of the estimated organization of protection and rescue.

Assessment of threat to the local government and the state is made on the basis of all available data on natural and other disasters that have occurred in the past or may occur in its territory, consequences that have arisen or may arise, scientific, technical and other knowledge and achievements and existing expert analyzes that have been used or to be used for risk assessment.

Threat assessment made by all levels of management, from the republic to local governments. [7] The bearer of estimates for the area of the subject is the competent body / authority of the subject, especially formed, in cooperation with other bodies and entities protection and rescue system [3]. Other bodies of state administration, scientific and professional institutions and other bodies of local self-government and legal persons who possess information relevant for the development of risk assessment should actively participate in the assessment, in order to achieve quality.

Estimates are also obliged to draw up, and legal entities with their activity can endanger human life and health or the environment, legal entities whose activities are related to water and energy, as well as legal entities producing, transporting, processing, storage or technological process used hazardous and harmful substances. To this end, submitted to the competent authority contingency plan and that, in accordance with the document, take measures to prevent accidents and limit the effects of the accident on human life and health, property and the environment. Assessment made and legal entities which are certain specific tasks in the implementation of protection measures and rescue [5].

From the above it can be concluded that the assessment of vulnerability of an extremely complicated project, which is characterized by a large number of factors that influence the design, process character and ending on the date of execution of the plan of making the assessment, but remains a "living document" that needs to be continuously monitored and updated , participate in the preparation of all the experts necessary to obtain the relevant data, professional service constantly monitors changes in data and carries out the implementation in the assessment, and the results of assessment are constantly report to the competent staff on the basis of which make treatment decisions.

The situation in the territory and the assessed level of risk of certain hazards are the elements that serve to define the forces, resources and preventive measures necessary to establish the optimal or minimum acceptable conditions for reaction in case of emergency. [7] The outcome of risk assessment is the elements for the plan of protection and rescue.

4.3. Protection and Rescue Plan

Protection and Rescue Plan is a document, the outcome of the planning process, which is performed to define the objectives and strategy-setting action and rescue forces with the use of resources and preventive and operative measures for protection and rescue. Planning of Protection and Rescue at the strategic level has certain characteristics that make it razdavajaju from other types of planning:

- sistem protection and rescue, there is no market to create profit, but to save corn due to the health of people, material goods and the environment and, consequently, this system creates conditions for avoiding, preventing or reducing damage;
- sistem protection and rescue always depends on the decisions of the competent state authorities;
- competent authorities, a system of planning and budgeting (in other ways), provide the resources for the functioning of the system [2];
- the ambition and objectives of the system are determined by the competent organs of the state, the entities responsible for the implementation and operacinalizaciju through assessment and planning.

Strategic planning for protection and rescue is a permanent and continuous process. The final result of the planning of protection and rescue should be a system of protection and rescue, which has all the elements in place to ensure the efficient and effective functioning in the conditions of the announcement or occurrence of hazards. Given that the state holder of the strategic planning of protection and rescue, it must ensure compliance of the system of protection and rescue, which is under the jurisdiction of state bodies with the protection and rescue of regional and municipal systems. The necessity of harmonizing the needs and opportunities arising from several facts [7]:

- sistem protection and rescue is a very expensive system;
- consist from a large number of interdependent elements;
- There must be a gradual deployment of forces and resources, and first used forces from the territory of the local government;
- Priority to activate and use are authorized and trained legal persons and organizations that certain tasks are performed as regular activities.

Taking into account the above facts, planning include: strategic planning, tactical planning and operational planning. Because of the great relationship mentioned types of planning in protection and rescue duties, it is necessary to bear in mind that the strategic planning largely depends on the other two and vice versa.

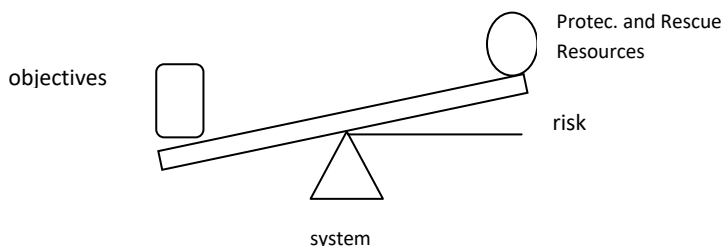


Figure 2. Relationship between variables of protection and rescue system

Source: author', adapted from [2]

Strategic planning for protection and rescue is the responsibility of the state bodies and defines the documents of the highest level, are determined strategic goals of protection and rescue and identifies ways of realization. This type of planning aligns protection and rescue system with the needs of protection and rescue in relation to hazards in the environment and on the territory of the State. The outcomes of the strategic planning of protection and rescue should be: protection and rescue strategy, the national plan for disaster risk reduction. State prepared by the National Plan for the Protection and Rescue. National Plan of Protection and Rescue regulating the use of force and means which directly dispose of state bodies, eg, public companies, specialized units of civil protection, military, etc.

Tactical planning is the bridge between strategic and operational planning. Since strategijsko planning generates guidelines and general objectives and operational translates concretely into practice, tactical planning should understand the "thoughts" of strategic documents; translate them into concrete tasks that achieve effects on the ground. Tactical planning carried out by the competent authorities of the regional management levels and units or authorities established for that purpose.

Operational planning involves accurate and precise tasks that are related to the situation on the ground and concrete and available forces and means, and allows direct operation of the existing threat. Operational planning is easier than the other two and realizes it in short timeframe competent managers of operational forces. [4]

There is an essential difference between strategic planning in relation to other species, for several reasons [2]: 1. Strategic planning refers to activities that include extended time dimension, both in terms of the time required for the implementation of activities and time to observe the effects; 2. From the point of impact, the consequences of certain strategies may not be visible for a longer period of time and their eventual impact is significant; 3. In terms of concentration of effort, strategija requires concentration on a smaller number of activities; 4. With regard to the model of decision-making, strategy number several important decisions, and application involves permanenatno make different decisions; 5. In terms of distribution, strategy affects a wide range of activities from the allocation of resources to the daily operations

Strategic protection and rescue planning should possess certain characteristics, whose possession of protection and rescue system, can achieve effective action:

- Cyclicity - which provides continuous planning in the short, medium and long term?
- Specificity - provide a system that is aligned with the real needs of the community;
- Up to date - only up to date plans correspond to the real situation and can respond to current challenges;
- Constancy - planning at all levels of management is carried out continuously, once production is carried out plans and future updates;
- Adaptivity - planning system must provide the flexibility to protect and rescue any situation;
- Integrity - all elements of society must be represented in the planning system.

Strategic planning is implemented through the planning, the following elements:

- planning forces;
- planning funds and
- planning preventive measures.

Force planning is an activity aimed at ensuring the strength and skills necessary to perform the tasks of protection and rescue. Power system protection and rescue activities represent holder protection and rescue system. Efficient and effective protection and rescue system directly depends on the quality of protection and rescue. Quality and rescue forces are directly defined level of training and qualification and rescue forces to carry out tasks of protection and rescue.

Resource planning aims to provide the resources necessary to maintain skills needed to respond to emergency situations. Capabilities are determined in relation to the identified hazards in the territory of the community. Given that certain resources already existing within the territory of the community, it is necessary to carry out an analysis of existing resources and determine the existence of deficits or surpluses. Planning preventative measures means the execution of certain activities before the creation of hazards. The preventive measures include measures planned urban construction, infrastructure maintenance, education and training, conducting vulnerability assessment, development of protection and rescue plans, etc.

4.4 The Importance of Strategic Protection and Rescue Planning

Strategic planning is critical to the protection and rescue system. Particular value has a long-term aspect of strategic planning. The system based on strategic planning more responsive to changes in the environment. This fact is especially important in the protection and rescue, as they are created to respond to disasters. The scale of the disaster depends on the need to respond, in terms of speed and the aspect of the scope of the measures taken. Uncertainty, unpredictability and speed of the changes are of such a character that the field of protection and rescue requires sizing system that quickly and efficiently responds to changes. Planned activity abstract character based on the best possible estimates, derived on the basis of the best information at the moment. Essentially strategic planning has the function of strategic programming of the application of the vision that was previously defined. [8]

Strategic planning is a "school" for the community and the protection and rescue. Size importance is reflected in the fact that this type of planning not only cover the protection and rescue system, but also all entities and residents of the community. Visionary strategic planning is acquired through the learning process of the community through a system of "hard" and "soft" information and synthesis of this learning into a vision of the direction in which the system is moving. Soft information represents the experience of persons who perform the planning and their intuition about co-operation with all the professional bodies who have information of importance for protection and rescue system. They claim informa those that are obtained based on the analysis and assessment, and which are the basis for designing the system. The narrow connection between the two types of information and unification is done in the situation in the territory. [9]

4.5 Planning Problems

Usability plans in specific situations depends on how the design and validation. There are many situations where the plans are not "coincide" with the new situation. Of course, there needs to be some level of agreement planned activities with the new situation, regardless of the degree of complexity of the situation. It is unrealistic to expect that, in

turn, the plan foresees all that in the future it can happen, especially when it comes to, the occurrence of which is less known.

Strategic planning is accompanied by a number of problems, which are in practice more or less represented, but regardless of the frequency of an impact on peramentnost and quality of strategic planning. The most common problems are [2]:

1. Poor predicting the future - this aspect of planning depends directly on the temporal dimension of the planning process, which is a longer planning period, the greater the possibility developments unanticipated events. With a spectrum of development of the community, this is an important moment, because disasters can leave serious consequences on the path of development of the community, or to slow or undermine the development capacity.
2. The imposition of planning solutions - Dynamic socio-political situation creates conditions in which the process of strategic planning in the field of protection and rescue intervene different actors from different intentions. Such events could significantly undermine the temporal dimension of implementing plans and put into question their quality.
3. Isolation of planning - strategic planning must be a function that enables collaboration of all stakeholders and rescue each other at all levels, and cooperation with all factors of society in a particular territory. Only in this way, the system can efficiently and effectively fulfill its tasks.
4. The bureaucratization of planning - protection and rescue system, it can not be subject to bureaucratic influence, at any level of governance. Of course it must comply with the rules and legal provisions in all spheres of work. Precisely because it is aimed at responding to the accident must be freed of bureaucratic influence.
5. Using different methods and approaches - the effectiveness of planning depends on the application method where the decisions are reached. The involvement of experts and expert social communities is essential pre-requisite for the effectiveness of methods of approach. Variability of the situation and the degree of uncertainty when it comes to accidents, require constant review of the methods used and the search for new and better solutions.
6. Focus on the goals of protection and rescue - it often happens that, but in order to meet the minimum legal requirements, will be awarded as additional tasks to existing agencies or entities. Such an approach is even increases the risk of improper action or work with information relevant to the system
7. Focus on the essentials - the basic document that makes it possible to build optimal protection and rescue system is to assess the threat of natural disasters and other catastrophes. It is not uncommon that the sizing of the system is done on the basis of unsystematic experience of individuals who have formal power. Such a system is in itself ineffective, dysfunctional and inapplicable. The cost of building such a system is useless spending in most cases.

5 CONCLUSION

Crises, in general, in the world have set before mankind a series of so-called global problems, which were mainly incurred as a result of uncontrolled development and brought with them awareness of the serious threats that threaten civilization. Since for most global problems characteristic reciprocal mutual influence makes it difficult to classify, and conditionally can

be divided into natural, technological, demographic, economic, socio-biological, socio-political and socio-economic.

Each unsolved, partly solved or unbeaten global problem gives rise to threats in the relevant areas of human activities. Knowledge of these threats makes it possible to take preventive measures to reduce the potential danger.

Globalization danger is characterized by the extent of consequences caused by various phenomena. The scope of activity of various phenomena in a most situations is relating to a number of countries, covered by the various nations, various infrastructure facilities, etc. These phenomena are the reason that a disaster of this scale are observed at the strategic level, whether that includes the territory of global, regional or national scale, and sometimes even local scales.

A significant part of the solution or at least the fight against major accidents is strategic planning. At the national level it needs to achieve visionary directing development sitsema protection and rescue, which is connected to the system in the environment and is able to react promptly to the risk incurred.

The basis for the development of protection and rescue system and planning at the strategic level is the assessment of threat of natural disasters and other catastrophes. Through vulnerability assessment defines the existence of various dangers threatening the given territory, including a large number of professionals with expert knowledge. Quality of info obtained in this way is the basis for drawing conclusions about the size of the potential dangers of certain phenomena. Risk analysis of the identified hazards, forming a portfolio of scenarios which harmonizes the worst case scenario, which is the basis for predictions of impending threats in the future and the possible consequences for the protected values in a particular territory.

The outcome of the risk assessment forces, resources and preventive measures to be constructed in order to provide capacity for prevention and response to disasters caused by natural disasters and other accidents. The main planning document at the strategic level and organize koordinaira engagement of forces and means for protection and rescue is the plan of protection and rescue. Protection and rescue plans in strategic terms, performs assignment of tasks to all subjects protection and rescue system in terms of guidance, I specialized civil protection units which have particular responsibilities in accordance with their empowerment. Strategic planning more concrete guidelines defined in the strategy to protect and rescue operations, with a focus on long-term sustainable activities aimed at sustainable development of protection and rescue system.

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EMERGENCIES-CURRENT SITUATION AND PERSPECTIVE AT THE WESTERN BALKANS

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Abstract

In the organization and implementation of civil emergency relief maximum engagement of governmental services and institutions in every emergency today is needed.

The consequences of emergencies include human losses, environmental destruction, and the inability to provide basic human needs (water, food, and shelter), and the destruction of infrastructure, all of which endanger the survival of civilians, and especially that of the most vulnerable: children, women, and the disabled, sick, and elderly.

The circumstances that can cause emergencies have changed significantly; security challenges still exist, as well as the need for efficient civil emergency planning and relief. Within the framework of the new circumstances, crisis relief in cases of emergency and armed conflict is the most important activity carried out by society. Good organization and efficient functioning of governmental services and other actors in an emergency situation and particularly in the case of armed conflict can be of paramount importance for the survival of civilian populations as well as for the management of the consequences of peacetime emergencies. The fact is that Republic of Serbia and countries in the region have recognised the new circumstances in which the frequency of emergencies increased significantly and due to that fact, the countries established state institutions in order to relieve suffering of the population in emergencies.

Still, the question is have the state institutions been efficient enough, how much emergencies have been unpredictable nowadays, as well as how to fight against that emergency situations? Response to this questions is vital for the survival of the population.

One of the solutions could be more significant regional connection regardless of the political inheritance from the 20th century.

Key words: emergencies, regional cooperation, security challenges, emergency preparedness

PRIVATE SECURITY TO PROTECT CRITICAL INFRASTRUCTURE

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Abstract: *In addition to the growing gap between the rich and the poor who, through mass migration of people coming back to haunt the culprits of insecurity in their countries, disapproves and the nature of the increasingly frequent natural disasters with damage on such a scale that, apart from irrecoverable loss of life, cause and effect which lead to complete cessation of functioning of organizations and increasingly severe recovery. If we add more and more intensive terrorist attacks and threats that escape the control of even the traditionally resilient societies, then the time in which we live, more than ever, the need for greater involvement of the private security sector in the protection of persons, property and business at all levels of society. The key is good communication and cooperation between the public and the private security sector, where the private security had mostly preventive role.*

Keywords: *prevention, private security, protection, emergency situations, critical infrastructure*

FLOOD RISK REDUCTION PLANNING

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ABSTRACT: Floods are everywhere in the world, and in Bosnia and Herzegovina are more frequent, more intense and more dangerous. They can not be prevented, but by taking effective preventive and operational measures their adverse consequences can be significantly mitigated. Management of bringing in a harmonious relationship with the organization to enforce the policy, objectives and tasks that the Managing Authorities set in fornt management organization. The planning process is a function of command and is the most important task managers in shaping the environment, ie. The organization to the activity of individuals who work together in groups effectively. Planning is important bridge to the gap between where we are now and where we want to go. Prevention floodd is of strategic importance for each country, and the damage caused by flood gives a special dimension to the seriousness of approach in the implementation of preventive measures to protect against floods. Despite the fact that for a long time are constructed levels that are regulated trough numerous watercourses, as well as to existing reservoirs and surface storage to a greater or lesser extent, involved in the protection, current activities in the prevention of floods in the Federation are insufficient to significantly affect the reduction of harmful consequences. Planning with the aim of reduction of flood risk is a complex and demanding process that requires the synergy of all the factors that deal with water management, protection and rescue regardless of the level of government. However, despite the fact that the new legislation which governs the area of flood-reaching, floods occur every year causing huge losses in material goods but also human lives. Reply from responsible and competent body that there is no sufficient funds for the effective defense of floods can not serve as justification for omissions in the planning. Plans in the parciijalni and conflicting and largely unenforceable in practice. Constantly shifting responsibility with authority on other institutions of authorities do not solve the problem, and that is that the risk of flooding is reduced to a minimum. This paper aims to show the existing legal provisions governing the prevention of flood defense possible shortcomings and therefore the need to review legislation enacted to address concerns of competences between individual authorities with a view to the reduction of flood risk.

The terms: reduction of risk, flood, planning.

PROBLEMS OF PROTECTION AND RESCUE SYSTEM MANAGEMENT OF A MUNICIPALITY

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Abstract: The protection and rescue system that is based on the organization of all the subjects in a certain area for a successful defense challenges of natural and other disasters. That certainly includes taking preventive, operational and remedial measures and activities. Experience shows that the most important preventive measures and, as the company is investing more in preventive measures and it is resistant to impacts of natural and other disasters. However, no matter how society was developed and invested in prevention, certain hazards can not be removed but can be reduced to a tolerable risk of their occurrence and consequences. For these reasons, the duty of society to plan and develop responses to the challenges of natural and other disasters in order to preserve the survival of society and to develop their willingness to operational activities at the time of occurrence and duration of natural and other disasters.

The local community is the one who has to identify risks and develop the strength to meet the challenges of natural and other disasters. To achieve a high-quality response at the community level, the whole system has to be synergy between all entities of the community, both vertically among all levels of government, as well as horizontally. In order to ensure the conditions for the establishment of a quality organization response to natural or other disasters, make the laws and regulations which serve as a benchmark for social activities in the area of protection and rescue.

Despite the comprehensive legislation and clearly shared responsibility in practice we have a different situation. Of particular concern is the situation in the local communities where we have a community where the disorganized system of protection and rescue to the local communities that have this issue resolved in a rather qualitative manner. The example of the medium developed municipalities, such as the municipality of Srebrenik, will indicate power to the basic problems faced by the local community during the establishment of an efficient and high quality system of protection and rescue.

Keywords: management, protection and rescue, risk, hazard

INJURIES CAUSED BY UNEXPLODED ORDNANCE

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Summary: Unexploded ordnance have become a daily occurrence. I can meet more recent funds, as well as those inherited from the past wars. Persons who come into contact with them can be trained for handling and treatment, or that do not have any information on the treatment of Unexploded ordnance. In the case of Unexploded ordnance found wearing face consequences can be much less than when they do untrained persons. Improper handling usually results in adverse events, whose consequences, loss of life, lighter or heavier hurting. This paper presents a classification lethal means on the basis of several criteria, and the focus is placed on the application of security measures at the crossing, work and extraordinary event resulting from improper handling, when they caused the violation of human resources.

Keywords: *Unexploded ordnance, violation.*

LESSON FOR THE FUTURE-FLOODING IN OBRENOVAC

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Extreme natural disasters in the Republic of Serbia, its worst-case scenario presented in May 2014. The catastrophic floods. One of the most affected municipalities in Serbia was the municipality of Obrenovac. Almost the entire municipality was under water depths of up to 4 meters. In the municipality of TENT, element of national critical infrastructure. Huge efforts and professionalism of all actors, prevented the realization of the worst scenarios. Carried out the evacuation of the population under incredibly difficult conditions, literally gasping for every second of time.

Events in the municipality of Obrenovac should be a lesson to all of us to turn to the creation of protection and rescue system and not to let something like this happen again.

Keywords: lesson, Obrenovac, floods

ENVIRONMENTAL SAFETY AS AN IMPORTANT PREVENTIVE FACTOR IN EMERGENCY SITUATIONS

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Abstract

Ecological safety is one of the important links in the chain of general security. In emergency situations, the protection of human health and the environment are the focus of emergency procedures because omission or untimely intervention can incline in environmental accidents of immeasurable proportions. Protection of settlements, as well as of industrial zones in emergencies involves overall and complex intervention that must be systematically planned (to act) preventatively. Also, in rural and agricultural areas there is a huge danger to human health and the environment in emergency situations. Safety assessment has the enormous importance for environmental protection and, in particular, in a post-hoc period. Planned phases of remediation relating to the improvement and further preservation of the environment are priceless and they are carried out through monitoring.

Key words: ecological security, assessment, emergency

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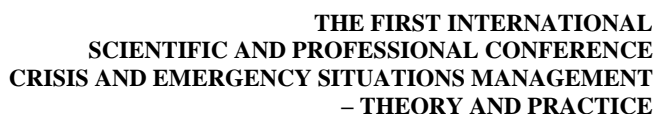
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ЦИП - Каталогизација у публикацији
Библиотека Матице српске, Нови Сад

355.58 (075.8)

БАБИЋ, Бранко

Процена ризика у ванредним ситуацијама- Нормативно правна регулативе за полагање стручног испита. Књига 3/[уредио] Бранко Бабић.- Нови Сад: Висока техничка школа струковних студија, 2013 (Нови Сад: Висока техничка школа струковних студија). – 206 стр.

Тираж: 100. – Библиографија

ИСБН 978-86-6211-004-6

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ЦОБИСС . СР – ИД 274915847