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## **APPLYING INTERNATIONAL STANDARDS OF SUPREME AUDIT INSTITUTIONS 5510 CONCEPT ONTO FUNDING OF DISASTER MANAGEMENT IN BOSNIA AND HERZEGOVINA**

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### **ABSTRACT**

Sustainable, efficient, and effective protection and rescue management is primarily dependent on the adequate allocation of the necessary financial resources in order to plan and act in cases of expected/unexpected hazards, risks, accidents and natural and other disasters. So, this paper assesses funding for disasters management at different levels of government in Bosnia and Herzegovina. Researchers referred to International Standards of Supreme Audit Institutions 5510 - The audit of disaster risk reduction to obtain responses which were subsequently tested by Kruskal-Wallis, Mann-Whitney U, Descriptive statistics, Ordered logit regression, and Spearman R correlation. The findings confirmed that disaster funds haven't been adequately allocated to different levels of government in Bosnia and Herzegovina.

***Keywords:*** *funding, performance auditing, disaster management, protection & rescue*

## 1. INTRODUCTION

Well known saying "An ounce of prevention a pound of cure" is vividly demonstrated by Federal Emergency Management Agency (FEMA), U.S. Economic Development Administration (EDA) and U.S. Department of Housing and Urban Development (HUD) who have found that mitigation funding can save the nation \$6 in future disaster costs, for every \$1 spent on hazard mitigation (National Institute of Building Sciences, 2018). Also, many other studies including Gall and Friedland (2018) have indicated that pre-disaster management is highly cost-effective so it is accepted that a monetary unit invested in pre-disaster management can save several monetary units in post-disaster management while pre-disaster management has gained great importance (Kaplan et al., 2018). Additionally, according to many scholars, disaster losses decrease – at least in relative economic terms - with wealth, and economic development which will solve the disaster risk issue. Others have noticed that development can be either risk-decreasing or risk-increasing (e.g., because urbanization can lead to the development of slums in high-risk areas), and that rich countries also have problems dealing with natural hazards (Hallegatte, 2014, p.3).

In anyway, adequate financing is one of the key conditions for efficient emergency management because it is necessary to undertake a series of activities, procedures, development of studies, plans, organization, procurement of equipment and resources, staff education, training, infrastructure, etc., so it is necessary to allocate certain funds for sudden and unplanned protection and rescue actions.

Funds for financing the activities in emergency management in Bosnia and Herzegovina (BiH) are generally realized through budgeting system at different levels of government; funds of legal entities; insurance; voluntary contributions; international aid-grants; and other sources established by laws (Official Gazette of BiH, 2004), Official Gazette of FBiH, No. 102/13, Official Gazette of the RS, no. 121/2012, and Law on the budget of Brčko District of BiH. Also, some of the risk assessments to natural and other disasters have defined in what percentage certain disciplines of management in protection and rescue (P&R) programs should be financed (Federation of BiH, 2014, p.68) so we can say that financing is done on the basis of risk assessments as well as programs for the development of institutions at various levels of government, and annual work plans.

Therefore, the objective of this research is to determine whether the disaster funds have been adequately allocated to every administrative level of government in BiH enabling them to create greater capacities to cope with hazards, accidents and disasters.

## **2. FUNDING OF PROTECTION AND RESCUE INSTITUTIONS IN BiH**

All administrative levels of governance in BiH allocate funds for P&R institutions at their own level. The Council of Ministers of BiH proposes funding of the budget of BiH institutions at state level (first tier of government). In accordance with article 23 of Framework Law (Official Gazette of BiH, 2008) funds shall be allocated in the budget of the institutions of BiH and international obligations of BiH for equipment, training, operation and functioning of the Operations Centre 112; for equipment, training, operation and functioning of the Coordination Body; for professional development and training of staff; to support of international protection and rescue operations; for rendering assistance to other countries, Entities and the Brcko District of BiH in case of natural or other disasters; for additional equipping and training of units set forth in Article 13, paragraph 1, subparagraph k), of this Law; and for other needs in accordance with Framework Law on the Protection and Rescue of People and Property in the event of natural or Other Disasters in Bosnia and Herzegovina (Parliamentary Assembly of BiH, 2008). According to The United Nations Office for Disaster Risk Reduction - UNISDR and World Bank (2008) report Ministry of Security (MoS) has allocated about €0.25 million per year for civil protection. Additionally, the same report states that MoS of BiH is expected that state level can be allocated with €2.8 million for the improvement and development of the P&R system at state level through implementation and harmonization of the Law on protection and rescue but this activity has not been implemented yet due to budget constraints.

According to the Law on protection and rescue in Federation of BiH - F BiH (second tier of government), funding is defined by chapter XII Financing and fees (articles between 179 and 189). An article 179 generates that the civil protection is funding from the following sources: budget of the F BiH, cantons and municipalities; funds of legal entities; insurance; voluntary contributions; international aid-grants; as well as other sources established by this and other laws (Official Gazette of Federation of BiH, 2003, p.2133).

The F BiH's law (Official Gazette of Federation of BiH, 2003, p.2133), explicitly, has not defined the percentage of funding for civil protection in budget at different administrative levels in F BiH while risk assessment of F BiH defines that the budgets at all tiers of government must ensure allocation funding for civil protection in the amount of 0.5 % of the total budget for the fiscal year for F BiH, and 1 % from the budget of the fiscal year for cantons and municipalities. If municipalities and cantons are unable to provide the funds in this way, they have to apply the principle of connectivity (Official Gazette of Federation of BiH no. 4/12 and 80/13, 2014, p.68). It is important to emphasize that the

principle of connectivity has not been incorporated within the Law on protection and rescue in F BiH. That might be reason why civil protection authorities in F BiH differently implement this principle. Regardless of inquiries neither Federation civil protection administration nor municipalities have sent a response on researchers request for explanation of connecting/sharing funds related to application of principle of connectivity. It seems that protection and rescue managers are confused with this principle. Some of them believe that there might be a mistake in regulating this principle and therefore should be removed from the risk assessment. The others stated that the principle is not included in the law and they are not obliged to precisely follow the risk assessment guidelines. Some others believe that principle has to be defined more precisely due to income differences in cantons and municipalities.

The principle of connectivity in the practice we can see through next example, in 2020, Program for protection, rescue and security of "Novi Grad" municipality Sarajevo has approved a budget for civil protection in amount of €1,081,177.81 (Novi Grad Municipality, 2020) of which €51,129.18 has been planned as a transfer for assistance in emergency situations to other subjects. Also, "Sarajevo Centar" municipality has earmarked budget for civil protection in amount of €982,958.64 and a transfer was planned to support pre-disaster activities in other municipalities and cities in the amount of € 146,996.41 (Sarajevo Centar Municipality, 2020). On the other hand, there are many municipalities that do not have the possibility to allocate funds for even 1% of their budgets according to vulnerability assessment, and therefore cannot make any transfers on this issue. It is evident that most of the civil protection institutions funds goes to employee salaries. In general, research shows that the budget of institutions at different levels of government are not standardized and not presented in detailed view, consequently it makes impossible comparing protection and rescue funds.

Nevertheless, it is worth assessing the annual budget allocated by F BiH government for civil protection. In 2020, it was about €11,560,694.94 (Government of F BiH, 2020), and was mainly used to enhance preparedness of civil protection headquarters through the provision of equipment and training; for protection and rescue services and units; and for mitigation activities was noted by UNISDR and World Bank (2008). An amount of €1,921,946.18 was allocated for non-current assets expenditures. There are evident capital investment transfers of funds to other levels of government in amount of €536,856.47. Also, the budget of the Federation has envisaged the amount of special fee for civil protection that is expected to be collected in 2020 (Government of F BiH, 2020). Moreover, current transfers to other levels of government and funds were planned in the amount of €1,124,842.13.

In fact, an important instrument of financing civil protection in Federation of BiH at this moment is paying a special fee for protection against natural and other disasters which is regulated by Law on civil protection in F BiH (Official Gazette of Federation of BiH no. 39/03, 22/06, 43/10, 2010). According to article 180 of this Law all legal entities/companies and citizens who are self-employed as well as government bodies at all levels of government in the Federation shall pay a special fee for protection against natural and other disasters amounting to 0.5% (of the salary base) of net salary of employed persons and all persons engaged under a contract of performing temporary jobs and contract. Special fee is calculated and paid simultaneously with the payment of salaries. The funds generated by the provisions of Article 180 of the Law are kept in the separate transaction account that belongs to the Federation, cantons and municipalities (Official Gazette of Federation of BiH no. 39/03, 22/06, 43/10, 2010).

It is important to point out that risk assessment of F BiH (Official Gazette of Federation of BiH no. 4/12 and 80/13, 2014, p.68) suggest that means collected by special fee should be planned for protection and rescue in the following framework ratio: 30% for equipping civil protection structures; 20% for prevention; 40% for remedying damage; 5% for the training of civil protection structures (trustee services, administration, committees, services for protection and rescue, civil protection units and population); and 5% of the costs of participation in protection and rescue operations in case of natural or other disasters. Thirty percent (30%) of funds planned to be invested for equipping are enough to keep operational level of basic services of protection and rescue institutions.

Out of this instrument fifteen percent (15%) of registered assets go to Federation of BiH, 25% to cantons, and 60% to the municipalities in which assets are realized and are used exclusively for the purposes defined by the Law on Protection and Rescue in F BiH (Official Gazette of Federation of BiH no. 4/12 and 80/13, 2014, p.67). In February 2016 some members of Parliament of BiH (F BiH Parliament, 2016) proposed to change (increase) the quota distribution of special fee for protection and rescue to the municipalities and cantons (instead of 15% allocated to F BiH make 7% going to FBiH, and 8% going to cantons while the rest 85 % of collected money should be allocated to municipalities) however the regulation remained intact. These funds are being accumulated during years on this "special fee" separated transaction account. The amount of the total funds generated by special fee can be calculated with following formula: the number of employees in the Federation of Bosnia and Herzegovina x average net wage in the Federation of Bosnia and Herzegovina x 12 months x 0.5%. According to data from the Tax Administration of F BiH on 31 December 2020, the number of employees amounts to 520,493 (Tax administration of F

BiH, 2020) while the average net wage for the period January-September 2020 was €485.72 (Tax administration of F BiH, 2020). If we include the presented numbers in the formula then we have got that the Federation of BiH ensures €15,169,059.17 of the special fee for protection and rescue on an annual basis. The authors estimate is that the amount of assets which institutions receive on the basis of special fee is even higher because it is also calculated on the net amounts which different persons receive on the basis of concluded contracts of temporary and occasional jobs (work contracts, royalties, etc.) of citizens. But there are no official records on the average amount of compensation paid to the number of concluded employment contracts.

The criteria used for the distribution of 60% of special fees to the municipalities is the place of work of any employed individual. This regulation creates disproportionate form of inflow of funds to municipalities. The reason may be the inflow of funds in relation to the number of employees according to Employer Registration in that municipality and the collection of a special compensation related to this condition. As of December 07, 2020, the number of employees per place of residence in the municipality of Livno was 5,105 and the number of employees per employer registration in that municipality was 4,479 while in the municipality of "Centar Sarajevo" the number of employees per place of residence was 19,797 while the number of employees per employer registration was 44,515 (Tax administration of F BiH, 2020).

Therefore, it is expected that Center Sarajevo municipality has received in 2020 budget about €1,299,427.35, while the municipality of Livno has expected €130,505.20. This method of calculation puts the underdeveloped municipalities in a subordinate position in the distribution of revenues whose actual inhabitants work in other municipalities, and leave that compensation there. The local community does not benefit from their work (in terms of receiving special fee for natural and other disasters) in other municipalities. Therefore, in February 2016, Parliament of F BiH have had initiatives and amendments of the Directive of calculating tax payments (special fee) for protection against natural and other disasters in order to enable collection of fee "according to the place of residence of the employed persons" instead of collection fee by place of work municipality where the employed persons' employer registration and location is. The proposed initiatives have not yet been adopted. In general, a conclusion was drawn that changes and amendments of regulatory documents take a long time.

If all institutions associate their funds for the procurement of scarce resources, then the whole system can get greater benefit. Since this is a significant amount of assets it is necessary to consider whether the money is allocated for right purpose in line with law provisions.

Similarly, in another entity, Republic of Srpska (RS) financing protection and rescue is provided by the budget of the RS (second tier of government) and municipalities; funds of legal entities; insurance; voluntary contributions; international aid-grants; and other sources established by other laws (Parliament of Republic of Srpska, 2017, p.42).

The budget allocated for civil protection administration of RS was €4,360,501.67 in 2020 (Parliament of Republic of Srpska, 2020). Expenditures for salaries were €2,515,556.05 and €1,141,203.47 for investments in non-current assets (buildings and equipment) while other expenses were allocated to the current maintenance. RS government provides organizing, equipping and operations of the Directorate of Civil Protection, as well as preparing, equipping, training and work of the headquarters for emergency situations and specialized units for protection and rescue in RS. The costs of taken measures for protection and rescue, supply of special equipment, material help to remove the consequences of natural and other disasters, prevention of the occurrence of further damage, ensuring basic living conditions in the affected area are responsibility of RS government. Currently, RS allocates 1% in budgets at entity, municipal and city levels for civil protection (Parliament of Republic of Srpska, 2020).

Additionally, article 155 of the same Law (Parliament of Republic of Srpska, 2017, p.42) defines that municipality or city funds: preparation, equipment, training and staffs' work for emergency units and teams of civil protection and their costs borne by the implementation of protection and rescue measures; customization and maintenance of protective shelters and other facilities; training the population in the area of protection and rescue; repairing part of the damage caused by natural disasters and other disasters in accordance with the financial possibilities and the decision of the competent authority of the municipality or city and other protection and rescue in accordance with this Law and other regulations. The municipality or city plan and allocate special funds of 2% in budget. Fifty percent (50%) of special fund is used for preventive activities and 50% for equipment and training structure for protection and rescue (article 153). Article 23, paragraph z of the Law, pertaining to the rights and duties of companies and other legal entities define that they also participate in co-financing preventive activities of local governments in proportion to the scope and extent of the threats arising from their activities. Article 69 paragraph 2 of the Law allows municipalities or cities using of funds realized from fees for lease of shelters. Earned money is exclusively used for financing the construction of new shelters as well as maintenance of constructed shelters. Annually this influx is about €178,952,15 of which 25% belongs to the Republic Civil Protection Administration, and 75% to municipalities (*Center for Security Studies – BH, 2010, p.43*).

Currently, RS is in the process of preparing proposals (amendments) to the law which stipulate separation of 2% of the direct source or the budget of the RS' cities and municipalities for civil protection. Association of municipalities and cities gave full support to the decision of each local community sets aside about two percent for developing a system of civil protection (Blic, 2017).

According to Article 78 of Brčko Districts' Law on civil protection (second tier of government), the system of protection and rescue is financed from: The District budget, contributions, donations, grants and international aid, and other sources in accordance with the law. In District's budget at least 1% (one percent) of assets is planned and allocated for special usage for civil protection of which 50% (fifty percent) is used for preventative activity, and 50% (fifty percent) for the equipment, and training structure of protection and rescue (Brčko district government, 2016). Brčko District (BD) allocated €4,632,108.58 for Civil Protection budget in 2020 (Brčko district of BiH, 2020).

Assessment and analysis of expenditures necessary to maintain and develop the system of protection and rescue is carried out within the program of development which is the basis for the budgeting of planned projects, measures and activities in the field of protection and rescue.

It is important to note that implementation of BiH Reform Agenda for 2015-2018 (Council of Ministers of BiH, 2015, p.4) should have influenced the financing of civil protection. By Economic Policy for 2016 of RS (Parliament of RS, 2016) and act of F BiH parliament „structural reforms to stimulate economic growth and job creation“ in F BiH (Government of F BiH, 2015, p.2) administrative bodies at different administrative levels of management are tasked to improve the business climate and competitiveness. In that sense, BiH has committed itself to the effort to eliminate the contribution of solidarity tax in the RS which was equivalent to the Fund to help flood-hit areas in F BiH and special fee for the protection and rescue of natural and other disasters in the Federation of BiH until the end of December 2016. Accordingly, in December 2016, the RS Peoples Assembly adopted the Law on the termination of the special contribution to the solidarity tax which came into effect from beginning of 2017 (Parliamentary assembly of RS, 2016). Additionally, in accordance with the Law on protection of fire of RS all companies operating in RS are obliged to calculate and pay “the fire fee” amounting to 0.04 % of the operating income. This fee has not been yet eliminated.

F BiH created a proposal of amendments to the Law on protection and rescue of people and material goods from natural and other disasters which purpose was to eliminate para-fiscal levies in December 2016. However, the law was not adopted by the end of 2020. The director of Civil Protection Administration of F BiH during our interview mentioned that there are some



negotiations between domestic authorities and international community to keep special fee in force.

If this goal is not excluded from Reform agenda this might be a reason why the P&R institutions may have lost extra funds for civil protection. Thus, pooling of funds and an adequate allocation of budget funds for the financing of the Civil Protection will have great importance in future.

The reforms are carried out to establish the basis for negotiations on the individual programs of financial and technical assistance from international financial institutions and the European Union as well as with other donors and partners who may want to support the reform agenda of BiH. Also, significant progress on the reform agenda will be necessary for an application of BiH membership that shall be reviewed by the EU. In this sense, governments continually taking measures to harmonize BiH procedures and legislation to the EU (Council of Ministers of BiH, 2015, p.6). Once the Law is adopted and the employers stop to pay a special fee in F BiH, civil protection institutions will be faced with the problem of financing, because the current regulations allowed them to have greater inflow of funds in this regard. Because the system has been in force for years, it would be difficult to replace those funds.

Finally, it is important to point out that the experience during the COVID-19 pandemic showed that it was good to have funds in separated account collected from the special tax for protection against natural and other disasters. On the other hand, there were lacking "previously adopted mechanisms (laws, decisions, procedures, etc.)" that would be activated and implemented as soon as the government to do so to procure required equipment and assets in a public and transparent manner in order to quickly save lives and property of BiH citizens.

### **3. RESEARCH METHODOLOGY**

Kaplan and Isaković-Kaplan (2018) explained that today, countries are doing different analysis/measurement in order to assess efficiency of different systems within government. Peters emphasized that citizens should have the right to know what actions have been taken in their name, and they should have the means to force corrective actions when government acts in an illegal, immoral, or unjust manner. Accountability provides government with a means of understanding how programs may fail and finding mechanisms that can make programs perform better (Peters, 2007, p.15). Thus, public administrations need to take concrete commitments to advance transparency, participation, and public accountability in government (Open Government Partnership, 2021). There are a significant number of countries that are using Performance auditing as young discipline

from the accounting and auditing area to assess different governmental systems. Since a significant number of countries are using International Standards of Supreme Audit Institutions (ISSAIs) for performance measurement of their governmental agencies so the researchers also used ISSAI 5510 - The audit of disaster risk reduction (DRR) like Kaplan and Isaković-Kaplan (2018) as a great supportive tool for performance auditing/assessment of disaster funds and grants administration.

Based upon referent literature and data already portrayed in previous chapter, the research question of this article could be articulated as whether disaster funds and grants have been adequately incorporated at different administrative levels of government in BiH? In order to assess such a research question, main assumption states that: "Disaster funds haven't been adequately allocated to every administrative level of government in BiH thus creating different capacities to cope with hazards, accidents and disasters".

To assess this assumption, researchers, used questionnaire mainly referred to ISSAI 5510 and asked 10 questions plus one specific question directly related to our elaborated hypothesis to research. Survey questions were organized in the Likert scale (5 = strongly agree; 4 = agree; 3 = neutral; 2 = disagree; and 1 = strongly disagree); In terms of sampling the members of different civil protection, defense and security organizations at state, entity, district, cantonal and municipal/city level were selected for participation in the survey. The main hypothesis is tested by using respondents' answers to direct statement 1 while other statements, were used as an ordinal variable for descriptive statistics, correlation analysis and ordered logistic regression methods used for data analysis like Kaplan and Isaković-Kaplan (2018). Those statements/hypotheses are:

1. Disaster funds are adequately allocated for P&R institutions at respondents' level of governance.
2. The central government and/or the authority responsible for disaster risk reduction have a complete overview of the funds received and/or allocated for disaster risk reduction activities by all relevant bodies in BiH.
3. There are specific laws or procedures in the country that govern the allocation and utilization of funds for the National Disaster Plan/substitute tools.
4. The disaster risk reduction policies have influenced authorized institutions to allocate the funds and to support projects for receiving funds.
5. Respondents' institution has been fairly allocated with funds collected by fee (natural and other disasters) from employed citizens.
6. The disaster risk reduction projects/programmes are completed on time and within the budget.

7. The flexibility is allowed for the use of otherwise earmarked funds in budgets in emergencies/preparedness for imminent disaster events.
8. The government has made use of cost-benefit and similar analyses to identify realistic alternatives.
9. There is an adequate strategic reserve of disaster relief goods.
10. A financial plan for P&R institution has been prepared according to the strategy/programme/plans.
11. The P&R institution is assigned a budget for disaster risk reduction to provide incentives for low-income families, communities, businesses and the public sector to invest in reducing the risks they faced.

Collected data (during 2017-2018) from 145 respondents that belongs to the civil protection, security, and defense institutions at all administrative levels of governance who belong to protection and rescue system were tested by several tests like Kruskal-Wallis H, Mann-Whitney U, Descriptive statistics, Ordered logit regression, Spearman R correlation, and one open ended question in order to identify differences between treated and untreated elements related to funding between different levels of government in Bosnia and Herzegovina and what was the main problem for non-efficiency of protection and rescue organization/institution at their level of governance.

#### 4. RESEARCH FINDINGS AND DISCUSSION

The results of the survey follow the several methods explained in the methodology, so table 1 shows that the 145 respondents, determined by their authorities responded to the presented survey's statements and our hypothesis was tested by using Kruskal-Wallis H.

**Table 1.** Descriptive statistics for statement 1

Administrative level of governance	N	Mean	Std. Dev	Std. Error
BiH (1 <sup>st</sup> tier of governance)	12	2.75	1.215	0.351
FBiH (2 <sup>nd</sup> tier of governance)	10	3.70	1.160	0.367
RS (2 <sup>nd</sup> tier of governance)	6	1.83	0.753	0.307
BD (2 <sup>nd</sup> tier of governance)	4	1.50	0.577	0.289
Cantons (3 <sup>rd</sup> tier of governance)	41	3.85	1.236	0.193
Municipalities (4 <sup>th</sup> tier of governance)	72	2.71	1.388	0.164
Total	145	3.03	1.416	0.118

*Source: prepared by authors based on an empirical research results*

A Kruskal-Wallis H test showed that there was a statistically significant difference at different level of governance in opinion about adequately allocation of disaster funds. The results are listed as follows:  $\chi^2(5) = 26.689$ ,  $p = 0.000$ .

Then, researchers used a Man Whitney U test to determine exact differences between various levels of government. The table 2 shows that the differences are almost identically allocated at all levels of government. The 7 of 15 individual paired Man Whitney U tests showed quite convincing significant differences, without asymptotic value. On the other hand, testing the differences between the responses at the state level and Brcko District shows asymptotic insignificance of differences (0.061 close to the margin). Other relationships are generally solid and there are no significant differences in the responses.

**Table 2.** Mann-Whitney U test for statement 1

<b>Administrative level of governance</b>		<b>Mann-Whitney U</b>	<b>Asymp. Sig. (2-tailed)</b>
BiH	FBiH	34,500	0.085
	RS	19,500	0.109
	BD	9,000	0.061
	Cantons	126,500	0.009
	Municipalities	425,500	0.932
FBiH	BiH	34,500	0.085
	RS	6,000	0.008
	BD	2,000	0.009
	Cantons	183,000	0.586
	Municipalities	215,000	0.034
RS	BiH	19,500	0.109
	FBiH	6,000	0.008
	BD	9,000	0.480
	Cantons	27,000	0.002
	Municipalities	142,500	0.155
BD	BiH	9,000	0.061
	FBiH	2,000	0.009
	RS	9,000	0.480
	Cantons	12,000	0.004
	Municipalities	76,000	0.102
Cantons	BiH	126,500	0.009
	FBiH	183,000	0.586
	RS	27,000	0.002
	BD	12,000	0.004
	Municipalities	788,000	0.000
Municip	BiH	425,500	0.932
	FBiH	215,000	0.034
	RS	142,500	0.155
	BD	76,000	0.102
	Cantons	788,000	0.000

Source: prepared by authors based on an empirical research results

Based upon these finding it is already safe to believe that main hypothesis: "Disaster funds haven't adequately been allocated to every administrative level of government in BiH thus creating different capacities to cope with hazards/disasters" seems to be supported. Once we look at only descriptive statistics' (3.) it is fact that responders in survey feel their programs are underfunded. First, they answered that the central government and/or the authority responsible for disaster risk reduction have a partial overview of the funds received and/or allocated for disaster risk reduction activities by all relevant bodies in BiH (S2). Secondly, survey participants at F BiH and Canton level responded that there are specific law or procedures in the country that govern the allocation and utilization of funds for the National Disaster Plan while responders at other administrative levels of governance evaluated this statement with lower score (S3). Similarly, respondents gave low agreement with statement that the disaster risk reduction policies have influenced authorized institutions to allocate the funds and to support projects for receiving funds (S4). Only responders at the F BiH level agreed with that statement that their institution has been fairly allocated with funds collected by fee (natural and other disasters) from tax payers (S5). They all have complaint about financing their P&R institutions. Obviously, it is difficult to complete the disaster risk reduction projects on time and within the budget (S6).

Additionally, there is limited flexibility for the use of otherwise earmarked funds in budgets in emergencies/preparedness for imminent disaster events (S7). Survey participants were queried regarding the government making use of cost-benefit and similar analyses to identify realistic alternatives (S8). Their responses were neutral. They are not satisfied with available strategic reserves of disaster relief goods (S9).

Also, among the survey participants, those at F BiH level agrees and Cantons slightly agrees that a financial plan for P&R institution has been prepared according to the strategy/programs/plans while others are not supporting this idea (S10). In the last statement of this section survey participants gave low score (mean 2.24) to the statement that P&R institutions have not been assigned a budget for disaster risk reduction to provide incentives for low-income families, communities, businesses and the public sector to invest in reducing the risks they face (S11).

**Table 3.** Descriptive statistics for S 2-11

Stat	Mean for administrative level of governance						
	BiH	FBiH	RS	BD	Cantons	Municipalities	Total
S2	250	2.80	3.00	1.25	3.90	3.32	3.31
S3	2.83	4.10	2.50	1.25	4.29	3.49	3.60
S4	2.50	3.70	1.83	1.50	3.80	2.86	3.08
S5	2.42	4.20	1.67	1.50	3.66	2.59	2.92
S6	2.83	3.10	2.67	1.25	3.63	2.93	3.08
S7	2.17	3.30	3.50	1.25	3.56	3.32	3.24
S8	2.58	3.40	2.83	1.50	3.49	2.87	3.02
S9	2.67	3.90	2.67	1.75	2.88	2.08	2.50
S10	2.50	4.00	3.17	1.25	3.85	3.38	3.42
S11	2.08	2.00	1.83	1.00	2.78	2.08	2.24

*Source: prepared by authors based on an empirical research results*

In order to determine the relationship between two ordinal variables (statement 1: focused on hypothesis and statements from 2 to 11 as supportive statements for testing elaborated hypothesis) the researchers additionally used Spearman R correlation. To comment the correlation results authors considered that  $r = 0$  indicates that there is no linear relationship between the variables; values of  $-1$  or  $+1$  variables are perfectly correlate; values between  $0.1$  and  $0.29$  small correlation; values from  $0.3$  to  $0.49$  medium and values of  $r$  between  $0.50$  to  $1$  have large relationship (Pallant, 2016, p.116).

**Table 4.** Spearman R Correlation – disaster funds

Statement S1									
S2	S3	S4	S5	S6	S7	S8	S9	S10	S11
0,26**	0,35**	0,43**	0,58**	0,36**	0,35*	0,35**	0,21*	0,27**	0,21*

Legend: \* Correlation is significant at the 0.05 level (2-tailed).  
 \*\* Correlation is significant at the 0.01 level (2-tailed).

*Source: prepared by authors based on an empirical research results*

The Spearman's R correlation findings showed that the medium and large correlation is expressed 60%, which improves relationships (Table 4). Medium correlation is expressed between statement 1 and statements 3, 4, 6, 7, and 8. The highest, large correlation between these two variables has been expressed between statement 1 and statement 5 which means that if all institutions dealing with pre-disaster tasks at different administrative levels of government had been fairly allocated with funds collected by fee from employed citizens that would have been followed by an increase value on the other variable. There are

four values with small relationship between those two variables. All correlation values have positive relationship between mentioned variables.

Once we compare the results of correlation analysis with the results of Ordered logit regression (Table 5) we can see that Ordered logit regression model improve our ability to predict outcome between variables in the model (statement 1 and set of statements from 2 to 11). The significance value is less than 0.05, so the model fit the data.

**Table 5.** Ordered logit regression – disaster funds

		Estimate	Std. Error	Sig.
<b>Threshold</b>	[S1 = 1]	2.380	.639	.000
	[S1 = 2]	3.839	.687	.000
	[S1 = 3]	4.692	.721	.000
	[S1 = 4]	6.541	.804	.000
	[S1 = 5]	10.362	1.306	.000
<b>Location</b>	S2	.006	.145	.964
	S3	.064	.175	.715
	S4	.446	.170	.009
	S5	.827	.153	.000
	S6	-.144	.173	.405
	S7	.148	.155	.340
	S8	.338	.206	.102
	S9	.077	.151	.611
	S10	-.081	.142	.566
	S11	-.265	.170	.118

*Source: prepared by authors based on an empirical research results*

Statistical analysis has confirmed causality between statement 1 (Disaster funds are adequately allocated for P&R institutions at your level of governance) and statement 4 (The disaster risk reduction policies have influenced authorized institutions to allocate the funds and to support projects for receiving funds), statement 5 (Respondents' institution has been fairly allocated with funds collected by fee (natural and other disasters) from employed citizens), from the survey's set of statements.

Professional and rescue professionals gave a higher rating for 4th statement that implies better causation score to the statement/hypothesis 1 in amount of 56%. Percentage impact between statements 4 and statement 1 obtained by calculating the exponential value of the estimate value for the specific statement that showed statistical significance in this study. Here we can conclude that protection and rescue professionals are neutral that the disaster risk reduction policies are influenced authorized institutions to allocate

the funds and to support projects for receiving funds. If we compare means from descriptive statistic (3.03 for statement 1 and 3.08 for statement 4) we see very similar scores. This shows relationship between those two variables. The correlation analysis showed moderate positive relationship and significance at the 0.01 level (0.43).

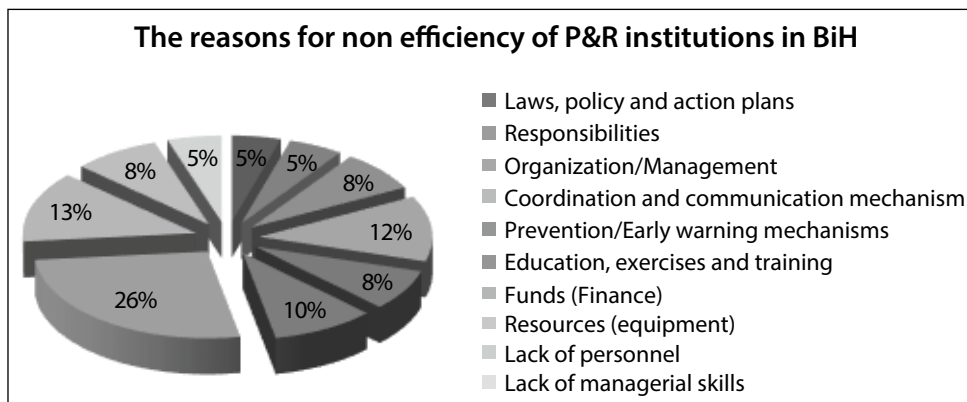
Next causality within this model determined that respondents gave a higher rating for 5th statement that implies better causation score to the statement/hypothesis 1. This result is 2.28 times higher. Relationship between variables have strong positive correlation and significance at the 0.01 level with statement /hypothesis 1. Also, here we have neutral opinion that P&R institutions at different administrative levels has been fairly allocated with funds collected by fee (natural and other disasters) from employed citizens, there was recorded the highest strong positive correlation (0.58) between these two statements expressed at the 0.01 level of significance.

At the end of survey respondents were asked to write the main problem for non-efficiency of P&R organization/institution at their level of governance. Among the survey participants, 113 of 145 (78%) responded to this open-ended question. The survey participants differ widely in their responses by giving several opinions to this question and a summary of their responses is shown in figure 1.

Majority of participants (26%) indicate that lack of funds allocated to their emergency management organization have been identified as a main problem for non-efficiency of P&R organization/institution at their level of governance. For 13% of respondents, the lack of resources might be considered as a main problem of their institution but they connected this problem with inadequate allocation of required funds. The next group, which comprises as the third largest group of participants (12%), believe that the main problem for non-efficiency of P&R organization is due to not adequate communication and coordination mechanism while the lack of education, exercises and training is considered as forth main problem identified by respondents. The respondents have been stated other main problems (responsibilities, organization, prevention/early warning, lack of personnel, and lack of skills) with involvement of less than 10%.



**Figure 1.** The main problem for non-efficiency of P&R organization/institution



*Source: prepared by authors based on an empirical research results*

Lastly, lack of funds was identified as an indirect generator of many other areas/problems for non-efficiency of P&R institutions at respondents' level of governance. Also, through the survey, P&R professionals from state and entity level stressed that donor programs need to be better monitored. Similarly, despite the organization for economic co-operation and development (OECD) recognized "importance of SAs for development effectiveness, evidence shows that public sector auditing in a number of countries is the weakest component of Public Financial Management" (Organization for economic co-operation and development OECD, 2012) so the adequate planning of funds in the System of Planning, Programming, Budgeting and Budget Execution (SPPBI) framework budget document need to be improved. Once BiH faced with recent disasters it has not been adequate monitoring system of allocation and utilization of funds. BiH must adopt procedures of monitoring system of allocation and utilization of domestic and international funds in support of disaster relief. We are witnessing the problems about donation for migrant crisis in Bosnia and Herzegovina as well as sharing donations for COVID-19 as well.

During the COVID-19 pandemic in BiH, we have seen that there were a lot of accumulated funds in special accounts (special fee) for the protection and rescue. So, it is desirable to continue the practice of keeping these accounts, because BiH doesn't have a strong economy that can meet the needs of citizen/legal entities in crisis/disaster related to emergency procurement of necessary assets, equipment since it saves time and enables prompt delivery of equipment needed for the affected population, protection of property, etc. However, legal solutions, procedures, etc. has not been worked there. They should have been ready and approved, and activated and implemented in

times of crisis and emergency situations. Usually, the urgency of a situation dictates quick action, and mistakes can often occur, and ultimately those who need help the most suffer.

## **5. CONCLUSION**

It is not possible to eliminate hazards, accidents and disasters but they should be constantly monitored and managed. Each stage of comprehensive emergency management model is important, however, if pre-disaster management is economic, efficient and effective the societies and countries are able to reduce and minimize the risks and potential impacts of hazards and disasters for citizens, goods and environment as well as prepare themselves to respond adequately.

At each stage of P&R management, it is very important to take into account the funds at disposition, and the adequate planning of funds in the Framework Budget Document, the Needs Plan and finally, the budget at all levels of government. It is necessary to make a plan for the joint procurement that could be supported by institutions at different levels of governance. The priority of acquisition has to be conducted at every level of government but institutions need to agree about comprehensive approach how to improve capacities and capabilities of P&R system in BiH. Also, Disaster funds should be adequately allocated to every administrative level of government in BiH for building capability of pre-disaster activities with the final aim to enable P&R system fully equipped with human, financial and other resources required to conduct efficient pre-disaster activities so as to be better prepared before disaster strikes. Additionally, an appropriate mechanism for tracing the resources allocated to pre-disaster management should be established. Moreover, P&R organizations needs to establish a mechanism to follow realization of funds related to the disaster management in order to avoid overlapping similar projects in the same municipality/area.

Given the overall elaboration conducted in the article we can say that main hypothesis assuming that "Disaster funds haven't adequately been allocated to every administrative level of government in BiH thus creating different capacities to cope with hazards/disasters" have been confirmed.

Additionally, the response to COVID-19 showed us that BiH institutions have not prepared legal and bylaw solutions, etc. which should be ready, approved, activated and implemented in times of crisis and emergency situations related to the urgent procurement of assets and equipment required for the protection of people and property. Once these solutions have been put in place, relevant organizations and institutions need to develop a performance measurement tools and systems to measure the activities and achievements.

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## **PRIMJENA KONCEPTA MEĐUNARODNOG STANDARDA VRHOVNIH REVIZIJSKIH INSTITUCIJA 5510 NA FINANCIRANJE UPRAVLJANJEM KATASTROFAMA U BOSNI I HERCEGOVINI**

### **SAŽETAK RADA**

Održivo, učinkovito i djelotvorno upravljanje zaštitom i spašavanjem prvenstveno ovisi o odgovarajućoj raspodjeli potrebnih financijskih sredstava kako bi se planiralo i djelovalo u slučaju očekivanih/neočekivanih opasnosti, rizika, nesreća i prirodnih i drugih katastrofa. Stoga, ovaj rad procjenjuje financiranje upravljanja katastrofama na različitim razinama vlasti u Bosni i Hercegovini. Istraživači su koristili Međunarodni standard vrhovnih revizijskih institucija 5510 - Revizija smanjenja rizika od katastrofa kako bi dobili odgovore koje su potom testirali Kruskal-Wallis, Mann-Whitney U, deskriptivnom statistikom, logit regresijom i Spearman R korelacijom. Nalazi su potvrdili da sredstva za katastrofe nisu adekvatno raspoređena na različite razine vlasti u Bosni i Hercegovini.

**Ključne riječi:** *financiranje, revizija učinka, upravljanje katastrofama, zaštita i spašavanje.*

