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**BUDGET SHORTFALLS IN MITIGATION IMPACTS
 OF EXTREME WEATHER EVENTS - A NEW
 CHALLENGE FOR SERBIAN SUSTAINABLE
 DEVELOPMENT**

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Abstract

Extreme events, closely connected to the global climate changes, are among the most serious risks in the world. In developing countries extreme events cause setbacks to economic growth and social development, jeopardizing the sustainable development. Extreme events in the Republic of Serbia (RS) represent the most significant risk in implementation of its sustainable development, especially in the northern part, Vojvodina. This paper presents limitations of Serbian government to provide sufficient budget for emergency services and for other activities in the process of reducing disaster risks. The hypothesis of this article is: Is the threat of extreme event recognised among policy makers, and how to convince them to provide adequate funds in the national budget, and also funds for budgets of local self governments which would be sufficient for the prevention and mitigation measures? Authors include the analyses of the budgets of local self government following parameters like: size of the municipality/city; the level of resources allocated by affected municipalities in relation to municipalities that have not been affected by the disaster; types of existing hazards; level of economic development of municipality/city and percentage of total funding commitment of some municipalities. Serbian public still does not have the opportunity to participate in the process of creating national budget, neither of budgets in local self-governments. The main goals of this paper are to initiate public discussion on necessary budget, needed for mitigation measures after extreme events, as a serious risk to the concept of sustainable development and involvement of all interested parties in creating specific donor programs for communities affected by extreme events. The methodology used in this article is usual for social researchers: historical analysis, comparative analysis and data analysis. It allows authors to use various documents from electronic databases, books, scientific journals, official documents and positive practice from international communities. All data were arranged and used for the purpose of achieving article's objectives. The paper shows that Serbia still lacks in adequate policy which enables local self government throughout Serbia to strengthen and increase the financial capacity for timely response to any kind of emergency. Conclusion remarks review actions that should be implemented in Serbia in order to strengthen the nation's ability to prevent, prepare, respond to and mitigate short or long term consequences which might be caused by extreme weather events. These remarks could be helpful for policy makers in a process of preparing and adapting Budget proposal for Serbian Parliament and in local self-government in their future efforts to provide all necessary conditions in improving the response to extreme events. Projecting appropriate budget, in regard to its own needs, threats and opportunities, Serbia could increase its security and strengthen national resilience. Therefore, performing those activities Serbia could improve its position, set by the last World Risk Report (2012), as one of the most risky country in the region.

Introduction

The United Nations International Strategy for Disaster Reduction (ICDR) defines natural hazards as natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihood and services, social and economic disruption, or environmental damage.⁴² Each year, governments all over the world provide large amounts of aid to regions affected by natural hazards. Extreme weather events closely connected to the current global climate changes are among the most serious risks globally. In developing countries extreme events cause setbacks to economy and social development. Emergency service and other stakeholders need access to the most accurate and timely information that is available to help them respond to these extreme events.

The paper reveals global climate changes and extreme events as one of the most pressing environmental, economic, political, and social issues in the Republic of Serbia (RS). Economic losses associated with natural hazards are increasing exponentially in developing countries, where local risk-transfer markets are generally weak.(Andersen, 2003). Hence, natural catastrophes have devastating socioeconomic consequences when they strike populated areas in less developed economies, where they are bound to have adverse impacts on the global competitiveness of exposed countries. Under the current circumstances RS can be recognised as one of those countries. This paper discusses limitations of Serbian government to provide sufficient budget for emergency services and for other activities in the process of reducing risks. The hypothesis of this article is: Is the threat of extreme weather event recognised among policy makers, and how to convince them to provide adequate funds in the national budget, and also funds for budgets of local self-governments which would be sufficient for the prevention and mitigation measures? The first chapter is devoted to presentation from a global to the local view on natural disasters and extreme weather event risks. Second chapter discusses state of RS in the context of mitigation of natural hazards and extreme weather event as its part, an overview of the budget for 10 municipalities, considering emergency situations.

The main goals of this paper are to initiate public discussion on necessary budget needed for mitigation measures after extreme weather events, as a serious risk to the concept of sustainable development and involvement of all interested parties in creating specific donor programs for communities affected by extreme events. The methodology used in this article is usual for social researchers: historical analysis, comparative analysis and data analysis. It allows authors to use various documents from electronic databases, books, scientific journals, official documents and positive practice from international communities. All data were arranged and used for the purpose of achieving article's objectives.

The conclusion shows that Serbia still lacks in adequate policy which enables local self-government throughout Serbia to strengthen and increase the financial capacity for timely and adequate response to extreme weather events.

From global to local view on extreme event risks

The necessity and significance of natural hazards risk management and building capacities for fighting against their consequences are currently urgent topics. The academic community takes an active part and offers assistance with determination of patterns, predicting effects and consequences of climate changes. However, the unpredictability and inability of precise determination of natural hazard intensity are still high.

During the year of 2011, there were 367 natural disasters, causing unprecedented damage in the amount of \$363.99 billion. This is \$234.19 billion more than in the previous year, which had 441 natural disasters. Year 2012 had an amount of \$44.61 billion in total damages which were caused by 260 natural hazards. Table 1 – Economic losses caused by natural disasters worldwide from 2010 to

⁴² United Nation International Strategy for Disaster Reduction

2012 shows that damages caused by earthquakes were \$279.55 billion, and accounted for 51.92% of total economic losses. Floods followed in terms of economic losses with \$ 128.85 billion for the period of last three years, and accounted for 23.93% of the total losses.

Table 1: Economic losses caused by natural disasters worldwide from 2010 to 2012 (in \$bn)

	Drought	Earthquake (seismic activity)	Extreme temperature	Flood	Storm	Wildfire	Total
2010	3,88	47.30	0.40	48.03	28.12	2.07	129.80
2011	8.14	230.30	0.78	70.76	50.87	3.14	363.99
2012	1.23	1.95	0.13	10.06	31.24	-	44.61
Total	13.25	279.55	1.31	128.85	110.23	5.21	538.4

Source: "EM-DAT: The OFDA/CRED International Disaster Database; www.emdat.be - Université Catholique de Louvain - Brussels - Belgium" (authors original work based on data source)

Due to potential and unpredictable damage which can be caused by occurrence of natural disasters, countries need to build and improve the resistance of their society and provide condition for implementation of accepted concept of sustainable development. There are many preventive actions which the government can take in order to mitigate damages caused by unpredictable risks. Although building defence mechanisms and capacities which can adapt to disasters is a start, it can never be fully prepared to anticipate all damage that can occur due to the unpredictable risks, especially those with a small probability of occurrence.

Extreme events in South Eastern Europe region

In South Eastern Europe (SEE) natural disasters cause substantial damages, however, due to the political and economic situation, risk reduction is not always satisfactory. Considering that the second wave of the global financial crises is still on-going, creating the conditions for sustainable economics requires the implementation of government policies able to ensure the the mitigation of consequences caused with extreme weaher events. Countries in SEE are exposed to a variety of natural hazards and the impact of such hazards pose potentially devastating social and economic impacts. Over the past decade, there were few important projects performed in support of strengthening disaster risk reduction actions across SEE. The South Eastern Europe Disaster Risk Mitigation and Adaptation Programme (SEEDRMAP) is the most influential on-going programme aimed at the development and strengthening of national capacities. This programme contains three components, but for the purpose of this paper, the authors focused mostly on the third component: Financing disaster loss reconstruction and recovery and the provision of insurance and risk transfer mechanisms and tools.⁴³

The author's intention to present a clear picture of the current state of risks is followed with a brief analysis of data from World Risk Report 2012 for selected countries.

⁴³ WB (2011), South East Europe and Caucasus Catastrophe Risk Insurance Facility (Serbia and Macedonia)
<http://web.worldbank.org/external/projects/main?pagePK=64283627&piPK=73230&theSitePK=40941&menuPK=228424&Projectid=P110910>

Table 2: Indicators and the amount of World Risk Index for selected countries

Country	Rank	Susceptibility	Lack of coping capacities	Lack of adaptive capacities	Vulnerability	Exposure	WorldRiskIndex
Albania	38.	20.73%	74.67%	45.26%	46.89%	21.25%	9.96%
Serbia	66.	18.77%	68.33%	40.46%	42.52%	18.05%	7.67%
Greece	72.	16.55%	52.27%	35.67%	34.83%	21.11%	7.35%
Romania	82.	22.06%	63.95%	42.95%	42.99%	15.77%	6.78%
Bosnia and Herzegovina	86.	19.47%	73.88%	48.58%	47.31%	14.02%	6.63%
FRY Macedonia	95.	20.66%	66.13%	43.63%	43.47%	14.38%	6.25%
Hungary	102.	16.18%	55.28%	41.38%	37.61%	15.61%	5.87%
Bulgaria	118.	16.90%	59.31%	41.11%	39.11%	11.66%	4.56%
Croatia	123.	17.16%	59.65%	36.39%	37.73%	11.53%	4.35%
Slovenia	132.	14.23%	51.36%	33.00%	32.86%	11.59%	3.81%

Source: World Risk Report 2012 (authors original work based on data source)

The World Risk Index incorporates exposure and vulnerability (susceptibility, coping and adaptive capacities) to natural hazards and provides an indicator of the probability of being affected by one. The vulnerability for a country is an arithmetic average of susceptibility, coping and adaptive capacities. And when vulnerability is multiplied with exposure indicator, World Risk Index is the result. The table shows that, from the selected set of countries, the highest possibility of being affected by natural hazards is Albania, followed by Serbia and Greece. The country that is most vulnerable to natural hazards is Bosnia and Herzegovina, as it has the worst capacity for long-term strategies and social change, high lack of capacity to reduce negative consequences during a disaster and a high likelihood of suffering harm. Serbia holds a firm second place in our selected set of countries, with high values of both exposure and vulnerability indicators, thus putting it in 66th place out of 173 countries included in the World Risk Index overview.

Current situation in Serbia

In 2009 the Sector of Emergency Management (SEM) was established in the Republic of Serbia (RS). Its central mission is to protect and rescue citizens, material and cultural property and the environment in emergency situations (Karabasil and Radović, 2010). Therefore, the protection and safety are not only the task for SEM; but it is a task for the entire Serbian society.

The Sector for Emergency Management of the Ministry of the Interior actively participates in the initiatives and activities of regional and international organizations in the field of emergency situations and crisis management. Serbia was active in the promotion of cooperation within the South East European Cooperation Process (SEEC). During its Chairmanship of SEEC 2011-2012, the RS paid considerable attention to the promotion of regional cooperation in the fields of environmental protection, prevention and elimination of the consequences of all types of disasters.⁴⁴

⁴⁴ Serbian Government (2012), Serbian priorities in the South East European Cooperation Process (SEEC), from

<http://www.mfa.gov.rs/Policy/Priorities/seec/PRIORITIES.SEECP%202011%2011.07.11.pdf>

Serbia was faced with enormous consequences from extreme weather events in 2012. The first, in February affected the whole country due to extreme cold and heavy snow, and following that, the summer months saw the longest period in history without rain and extremely high temperatures. In all those events agriculture suffered enormous losses which had to be determined.

It is important to mention the current Law on Emergency of the Republic of Serbia (Law on E/S), (Serbian Government, 2009), which encompasses the guidelines and proposals of the United Nations International Strategy for Disaster Risk Reduction (United Nation [UN], 2005). In the Law on E/S of Serbia extreme weather events are not clearly defined, it is just a part of numerous events.⁴⁵

This law provides only descriptive definition, without actual climatic parameters and measures for the protection of the health and life of the citizens, and so on corporative sector. The tradition has been continued because more than two decades ago Serbia used the Law on protection from elementary and major disasters⁴⁶ (Serbian Government, 1989), which also did not have clear paragraph which regulates the limit when the extremely high air temperature becomes the harmful event.

International Panel for Climate Change defines “extreme weather event” as “a rare event concerning its statistical distribution on a certain spot.” Some authors define it like “extreme climatic event” and it presents:” average number of weather events in certain period of time, when that average value is itself extreme.”

Professor Anđelković explained that “under climatic extremes we consider not only the extremes of the atmospheric events in narrow sense, but also the consequences of climatic processes, including the seasons of their occurrence and extremes of the parameters of climatic elements” (Anđelković, 2010). The classification which he suggested is shown the following: extreme climatic events are high and low temperatures, intense precipitation, hail, frost, strong wind and others; extreme climatic seasons are drought, flood seasons, heat waves, cold waves and others; extreme climatic consequences are fires, avalanches erosions epidemics, spreading of noxious species and other.

For all mentioned above it is clear that Serbia needs a precise definition of extreme weather events like a first step which leads to its adequate response. Stakeholders should have in mind that at any moment a severe weather event could be experienced with consequences that might have been avoided if we were adequately prepared. (Radović and Keković, 2012)

The Sustainable development Strategy for Serbia⁴⁷ identifies a need for an action plan for the adaptation of economic sectors to climate change. Many laws are put into force like the Law on Meteorological and Hydrological activity⁴⁸. This law regulates the authority of the Republic Hydro Meteorological Service of Serbia (RHMSS), as a National Hydro Meteorological Service. This activity related to the authority of RHMSS in regional disaster risk reduction activities such as South East Europe Disaster Risk Reduction Strategy (United Nation Development Program [UNDP], 2011) and is in full compliance with the Law on E/S. The Hydro Meteorological system for early warning is designed to be represented as an integral part of the national protection and rescue system.

Analysis of Serbian budget for extreme weather events and other types of natural disasters

The government in Serbia has very limited financial capacity to assist citizens in regaining the assets and the productive capacity destroyed by natural disasters. Serbia has faced the biggest budget deficit in history, without any agreement with the International Monetary Fund (IMF). Therefore, it is not able in current circumstances to implement the Serbian post-crisis economic growth and development model 2011-2020, adopted in Belgrade in August 2010. The situation is especially critical in the area of mitigation of consequences caused by extreme events. Many times the Serbian

⁴⁵ The Law on Emergency Situations, article 8, paragraph 1, item 3

⁴⁶ Official Gazette of the Republic of SRS, No. 20/77, 52/89

⁴⁷ Official Gazette of the Republic of Serbia, No. 111/09

⁴⁸ Official Gazette of the Republic of Serbia, No. 88/10

Government was not able to provide necessary help to jeopardized populations due to financial constraints.

The Law on the Budget System of the Republic of Serbia represents one of the most significant system Laws, and governs the area of public finance management in the entire country. Due to that Law, every year the Government plans some financial resources for economic classification 160, number 484 for reimbursement for damage and injury caused by impacts of emergencies. In the Law on the Budget system for 2010, and 2011, the amount was only 50 mil. RSD. In Law on the Budget System for 2012 situation was exactly the same despite the quadrupled damage in 2011 in relation with 2010. Yet, in 2013 this amount was doubled.

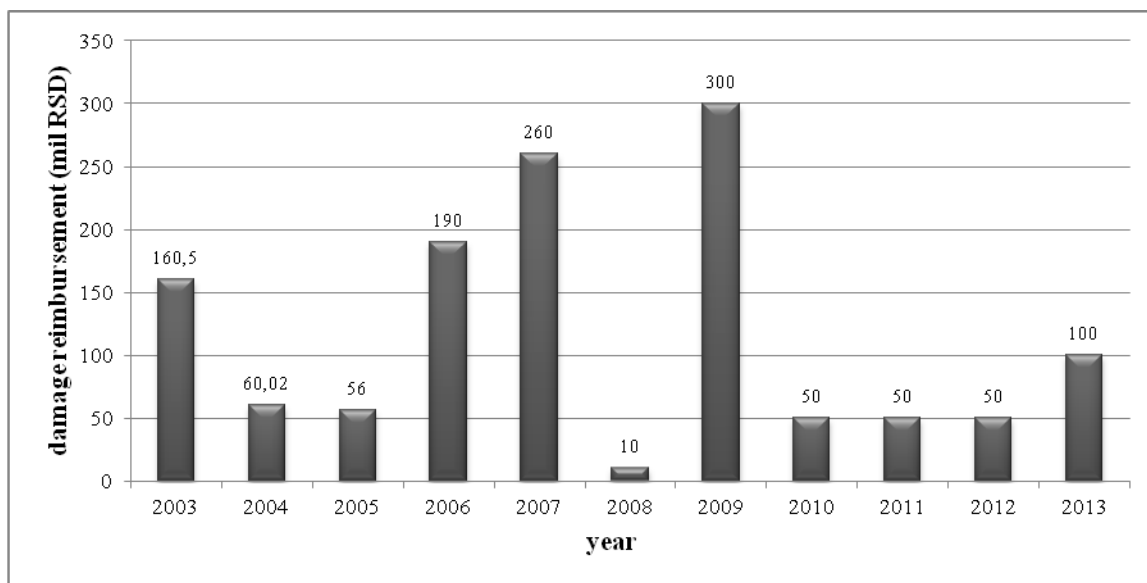


Figure 1: Damage reimbursement for injuries or damages caused by natural disasters or other causes (mil RSD) - Source: The Law on the Budget System of the Republic of Serbia

By the Law on financing local authorities, which is in effect from 2006, it is anticipated that the transfers from the republic budget to the local authorities is 1,7 % of GDP. Because of economic crisis in 2009 and in 2010 these transfers were reduced in half. What is also important is that the law allows municipalities to designate the funds for emergencies in their own budgets.

For the purpose of this article, from the data selected from PPES program⁴⁹ 10 municipalities were analyzed. The first five municipalities are the biggest in the dataset, and the second five are the smallest.

⁴⁹ The Preparedness, Planning and Economic Security Program (PPES) is a five-year effort funded by the United States Agency for International Development (USAID) and implemented by DAI in Serbia organized in two components: Preparedness and planning (PP) and Economic security.

Table 3: Overview of selected municipalities in terms of size, level of development, threats and number of citizens

Municipality	Size of municipality ⁵⁰	Level of development (1-the best, 3-the worse)	Potential or resent threats	Experienced/no experienced	Number of citizens
Niš	big	2	floods	no	250.518
Kragujevac	big	1	hail	yes	175.802
Leskovac	big	2	floods	yes	155.802
Subotica	big	1	not defined	no	150.534
Zrenjanin	big	2	floods	no	132.051
Nova Varoš	small	3	not defined	no	10.335
Dimitrovgrad	small	3	not defined	no	9.913
Golubac	small	2	floods	yes	9.913
Sokobanja	small	1	fires	no	8.407
Vladičin Han	small	3	landslides	no	8.338

Table 4: Budgetary Review for selected municipalities for 2011

Municipality	Approved total budget in 2011 (.000 RSD)	Dedicated funds					Permanent budget reserves (.000 RSD)	din per capita
		for prevention	for flood consequences mitigation	For Civil protection HQ functioning	Hail protection	Fires		
Niš	8.731.046	32.000.000	0,00	0,00	0,00	0,00	5.000	50,50
Kragujevac	7.605.646	550.000	0,00	0,00	0,00	100.000	20.000	117,46
Leskovac	2.894.166	0,00	0,00	0,00	1.400.000	0,00	8.000	60,33
Subotica	5.422.330	0,00	800.000	0,00	0,00	0,00	10.000	71,74
Zrenjanin	5.705.553	0,00	0,00	600.000	0,00	0,00	2.000	19,69
Nova Varoš	622.995	0,00	0,00	0,00	0,00	0,00	1.500	145,14
Dimitrovgrad	376.612,15	0,00	0,00	0,00	0,00	150.000	1.500	166,45
Golubac	136.609	0,00	0,00	0,00	400.000	0,00	300	70,61
Sokobanja	363.553,9	100.000	0,00	0,00	0,00	50.000	300	53,53
Vladičin Han	331.296	0,00	0,00	0,00	0,00	0,00	1.000	119,93

⁵⁰ small-less than 20.000 citizens, big-more than 100.000 citizens

From the budgetary review in Table 4 for the first five (big) municipalities, average total budget for 2011 was 6.071.748.200 RSD. For emergency situations average budget was 15.980.110, which represents 0,26% of the average total budget. Average budget for emergency situations per capita was 63,94 RSD.

Situation in the second group of municipalities (small) is similar. Average total budget was 366.213.211,2 RSD, and for emergency situations only 1.060.000 RSD, which is 0,29% of the average total budget. Average budget for emergency situations per capita was 111,1 RSD.

Even though the difference between size of municipalities are substantial, in our sample the percentage of budget for emergency situations in total budget is almost the same. The difference is visible when average budget for emergency situations per capita is observed, because small municipalities have bigger budget per capita for 47,16 RSD.

Having in mind economic situation in the Republic of Serbia it is obvious that capacities of adaptation which depend of social wealth and of the presence of satisfactory health and educational structure of the inhabitants (Portney and Stavins, 2000) are obviously low, which points out the urgent need for their strengthening.

Conclusion

The world should be adapted to climate changes, and so should Serbia. In Serbia, impacts of extreme weather event present a major environmental challenge, posing threats but also providing opportunities for future sustainable development. In any level of government, money equals people, people equal work and work equal results. A proper budget is a base for all activities. The Serbian policy makers have to adapt the budget after accessing the real and present opportunities threat that Serbia is facing. Given the fact that the response on extreme weather events can mean the difference between sustainable development or suffering long term consequences from it, the concern about funding actions for emergency services in this area in future is legitimate. The facts about budgeting emergency services in Serbia are useful for projecting adequate budget for all, in regard to their own needs, threats and opportunities, and right on equal security level. We have to learn lesson from the past. As Churchill said once: The further backward you can look, the further forward you are likely to see. Despite all circumstances in its economy, Serbia has to move forward to the next level of implementation of sustainable development trying to avoid the losses caused with extreme weather events.

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