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# THE EVOLUTION OF EUROPEAN PERCEPTION OF THE TERM „HYBRID WARFARE“\*

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The emergence and use of the term „hybrid warfare“ is related to the efforts of the US military analysts to explain the changes in the physiognomy of war, as well as the practical problems of the US Armed Forces on the ground as a result of these changes. A wider debate within American (Western) military circles on the inefficiency of Western conventional power in asymmetric conflicts at the beginning of the 21<sup>st</sup> century has been caused by the combined use of conventional and irregular methods of warfare by the Taliban, Al Qaeda and Hezbollah. In this situation, the term „hybrid warfare“ has provided an explanation for the asymmetric concept of warfare on which Western military forces did not have an adequate response. The theory of „hybrid warfare“ was established in 2007, and its essence indicated the combined use of violent methods by non-state actors. Since the beginning of the Ukrainian crisis, the perception of the concept of „hybrid warfare“ has been considerably changing and expanding. In addition to violent methods, the concept has also included non-violent methods such as economic, diplomatic, political, information methods, etc. Moreover, non-state actors were no longer in the focus of the concept, and states have become the main stakeholders of hybrid activities. Thus, the term „hybrid warfare“ comes out of narrow military considerations and gets wider political and media attention. In this paper, the authors have tried to identify and explain the reasons that led to the change of the perception of the term “hybrid war” after the Ukrainian crisis, despite the evolution of the meaning of the term, from the non-state to the state-centric concept of warfare. In order to achieve this goal, the authors have set the European perception of Russian involvement in the Ukrainian crisis in the focus of their consideration.

*Key Words: hybrid warfare, non-state approach, state-centric approach, Europe, Russian Federation, Ukrainian crisis*

\* The article is the result of the Strategic Research Institute project „Hybrid warfare – experiences and perspectives“.

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## Introduction

After the Cold War, a new security agenda has been established all over the world. At that point of time, European security was mostly discussed in the terms such as peacekeeping, counter-terrorism and, at times, counter-insurgency.<sup>1</sup> However, since 2014 Europe has faced with a new kind of security threats, characterized by the combination of a large number of different types of warfare – ranging from conventional, irregular or special military units, all the way to informational, economic and cyber means including acts of terrorism and criminal activity. These kinds of threats are most commonly known as „hybrid threats“, „hybrid warfare“ or „hybrid war“. The first mention of these terms can be found in the US military terminology from the beginning of this century. Despite this fact, the aforementioned terms have become widely known only after the emergence of the Ukrainian crisis. As a result, a series of terms containing the word „hybrid“, such as war, warfare, threats or tactics, have become an indispensable part of the mainstream vocabulary of political debates in Europe. At the same time, many scholars and analysts have become confused by the popularity of the terms, which has caused conceptual ambiguities to this day.

Nevertheless, due to the fact that Europe has faced with various forms of unconventional and non-traditional threats that can result in very serious consequences, the necessity for interrogation and explanation of this phenomenon has been created. Thus, the main research questions in this paper are what the actual meaning of the term „hybrid warfare“ is, whether it is a new type of warfare or a new term for the old concept? Furthermore, who the subject of hybrid activities is and who these activities are directed to. Consequently, the objective of this work is to analyze and explain the meaning of the term „hybrid warfare“ from the appearance of this term to the present and, crucially, its perception by European academic, political and military circles.

## Non-State Approach to Consideration of the Term „Hybrid Warfare“

The usage of the new terms, or the adaptation of the old ones, in order to describe and explain emerging security phenomena and processes, is the common practice in various terminologies in the fields of security, military, politics, science, journalism, etc. The transformation of the war that began at the end of last century has created new security reality that could not be described by the existing concepts. As a result, a new concepts have been introduced in order to explain the essence of the new security environment. One of such concepts that has also gained the greatest public attention is „hybrid warfare“. This term has emerged through the aspiration of military strategists and theorists to explain the characteristics of the new concept of war, which certainly points to the specificity of contemporary war conflicts in relation to the previous classic war ones.

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<sup>1</sup> Nicu Popescu, *Hybrid tactics: Russia and the West*, EU Institute for Security Studies, Alert No. 46, October 2015.

In addition to the classic, or the traditional, or the conventional war, in the course of history, various types of wars have been perceived - nontraditional, irregular, asymmetric wars, etc. Furthermore, many, if not most of wars, were characterized by both regular and irregular operations in order to exploit the advantages of each kind of force. Thus, a strategic synergy that increases the probability of inflicting damage on an opponent has been created. What is common for all those military activities is that they have been directed towards identification of weaknesses and vulnerability of enemies.

The „hybrid war“ has been recognized as „the newest“ kind of war, and although it has been used for some ten years, „hybrid warfare“ is not the first term used in an attempt to explain the current transformation of the nature of the war. Yet, under such semantic determination that has arisen within the circles of the US armed forces, the beginning of the use of the term is related to the middle of the first decade of the 21<sup>st</sup> century. It pointed to a new, largely unconventional mode of warfare, which represented a problem to the United States Armed Forces in war practice.<sup>2</sup> Initially, the meaning of the term was seen as military concept to which comparatively superior conventional Western forces did not have an adequate response.

The first known use of the term „hybrid warfare“ dates back to 1998 when Robert Walker recognized „hybrid war“ in his paper *Spec Fi: the United States Marine Corps and Special Operations* and defined it as: „Hybrid warfare' is that which lies in the interstices between special and conventional warfare. This type of warfare possesses characteristics of both the special and conventional realms, and requires an extreme amount of flexibility in order to transition operationally and tactically between the special and conventional arenas”.<sup>3</sup> Hence, Walker took over and quoted the definitions of special and conventional operations according to *Joint Pub 1-02 – Department of Defense Dictionary of Military and Associated Terms* from 1989 and concluded that those two elements, when combined, comprise „hybrid warfare“. Walker believed that there was nothing new in the concept of hybrid operations because the combination of closely coordinated special and conventional operations has impacted on the outcomes of numerous military campaigns, for example in the American Revolution.

After 2000, gradual introduction of a new term among the US military expert circles has begun. They pointed out to the concept that describes a military operational approach that emerged in the post-Cold War period. Captain William J. Nemeth used this term to describe the Chechen insurgency that blended (hence the word 'hybrid') guerrilla warfare with modern military tactics and use of technology – from mobile telephones to the Internet.<sup>4</sup> Nemeth argued that the Chechen society was in a hybrid situation between a pre-modern and contemporary state, where the architecture of the modern society was built upon the basis of a traditional, pre-state clan (*teip*) and family ties.<sup>5</sup> Therefore, „hybrid“ represents, according to Nemeth, a war in which differences between regular and

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<sup>2</sup> Frank G. Hoffman, *Further Thoughts on Hybrid Threats*, Small Wars Journal, March 3, 2009.

<sup>3</sup> Robert G. Walker, *Spec Fi: The United States Marines Corps and Special Operations*, Master's Thesis, Monterey, CA, Naval Post Graduate School, December 1998, p.4-5.

<sup>4</sup> Nicu Popescu, *Hybrid tactics: Russia and the West*, EU Institute for Security Studies, Alert No. 46, October 2015.

<sup>5</sup> Andras Racz, *Russia's in Hybrid War in Ukraine-Breaking the Enemy's Ability to Resist*, The Finnish Institute of International Affairs, Helsinki, FIIA Report 43, 2015, p.28.



irregular war have been blended, on the one hand, and that kind of structure enabled Chechens to mobilize their society for the war and provide widespread support for the fighting through family ties, on the other hand. This interference of the traditional and modern components leads to a special kind of creativity of the pre-state society in using modern technology and weapons, and this way of thinking creates surprise and tactics capable of overcoming the difference in power between two armies.

In 2002, Alan Dupont, while he was thinking about the new kind of war that the world was facing with, noticed that asymmetric wars would not only be fought by terrorists and criminals. The other armed groups, which inhabit the lower reaches of the threat spectrum, will fight hybrid forms of warfare, where modern, conventional weapons systems may be of limited use.<sup>6</sup> Although „hybrid war“ was not exclusively in the focus of his attention, and he did not make a clear distinction between „asymmetric“ and „hybrid war“, an attempt of this Australian strategist is worth of attention. It is an attempt of explanation of an irregular way of fighting between a non-state actor that is facing with more powerful state actor.

Many authors have tried to understand and explain the nature of the „hybrid war“. However, the historical milestone that illuminates the nature of this kind of war happened in 2006. The Israel-Hezbollah War of 2006 put the concept of „hybrid war“ in focus because the term „hybrid“ has been subsequently used to describe the strategy used by Hezbollah. Hezbollah, led by Hassan Nassrallah, represents a rising threat. Mixing an organized political movement with decentralized armed cells employing adaptive tactics in ungoverned zones, Hezbollah affirms an emerging trend. Highly disciplined, well-trained, distributed cells can contest modern conventional forces with an admixture of guerrilla tactics and technology in densely packed urban centers.<sup>7</sup> This case demonstrated the ability of a non-state actor to deconstruct vulnerability of not only a powerful state, but Western style militaries. This situation had a great influence on actualization of this problem and the concept of „hybrid warfare“ was discussed in more details starting with Lt Col Frank Hoffman.

Hoffman introduced this concept into everyday use within the professional circles of the US Armed Forces through numerous and still frequently cited papers. Considering *The National Defense Strategy* from 2005, Hoffman stressed: „... there are a broaden number of challenges facing the United States. These include traditional, irregular, terrorist and disruptive threats or challengers. This has created a unique planning dilemma for today's military planners, raising a choice between preparing for states with conventional capabilities or to more likely scenario of non-state actors employing asymmetric or irregular tactics.“ Emphasizing the possibility of combined use of both conventional and non-conventional tactics, he said: „...these may no longer be separate threats or modes of war ... future contingencies will more likely present unique combinational or hybrid threats that are specifically designed to target U.S. vulnerabilities. Instead of separate challenges with fundamentally different approaches (conventional, irregular or terrorists), we can expect to face competitors who will employ all forms of war and tactics, perhaps

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<sup>6</sup> Alan Dupont, *Transformation or Stagnation? Rethinking Australia's Defense*, Strategic and Defense Studies Centre, The Australian National University, Canberra, 2002, p.12.

<sup>7</sup> Frank G. Hoffman, *Lessons from Lebanon: Hezbollah and Hybrid Wars*, Foreign Policy Research Institute, E-notes, 2 August 2006.

simultaneously”.<sup>8</sup> He also said that „hybrid war“ can be conducted by both state and a variety of non-state actors. Likewise, these multi-modal activities can be conducted by separate units, or even by the same unit, but are generally operationally or tactically directed and coordinated within the main battle space to achieve synergistic effects in the physical and psychological dimension of a conflict.<sup>9</sup> Considering the reasons why the U.S. military faces this kind of threats, Hoffman pointed out to globalization, proliferation of advanced technology, violent transnational extremists, and resurgent powers.<sup>10</sup>

As we can notice, Hoffman took over and promoted this idea from the framework of the Fourth Generation of Modern War (4GW) established by William S. Lind in 1989. In this paper, Lind and a group of American officers presented an idea about different generations of modern war. According to them, the First Generation of Modern War, the war of line-and-column tactics, where battles were formal and the battlefield was orderly with a lot of engaged people, ran roughly from 1648 to 1860. The Second Generation of War was developed by the French Army during and after World War I, in which the massed firepower replaced the massed manpower. The doctrine was summed up by the French as „the artillery conquers, the infantry occupies.“ The Third Generation of War was developed by the German Army and it was based not on firepower and attrition, but on speed, surprise, and mental, as well as physical, dislocation. Based on maneuver rather than attrition, the third generation tactics were the first truly nonlinear tactics.<sup>11</sup> The characteristics such as decentralization and initiative were carried over from the Third to the Fourth Generation, and in other respects the Fourth Generation marks the most radical change since the Peace of Westphalia. In the Fourth Generation war, a state loses its monopoly on war. All over the world, state militaries find themselves fighting non-state opponents such as al-Qaeda, Hamas, Hezbollah, etc.<sup>12</sup> Instead of using hard power, the focus is on soft power in order to break the political will of an enemy. Hoffman noticed that the core of 4GW concept is that weakening of the state as an organized and governing mechanism results in the rise of non-states actors, which can challenge the legitimacy of the state.<sup>13</sup>

Hoffman gave a definition of „hybrid war“ explaining it through the threats: „Hybrid threats incorporate a range of different modes of warfare, including conventional capabilities, irregular tactics and formations, terrorist acts including indiscriminate violence and coercion and criminal disorder. Hybrid war can be conducted by both states and variety of non-state actors”.<sup>14</sup> Although Hoffman emphasizes that subject of hybrid activities can be both state and non-state actors, if we analyze his papers, we can notice that his attention to actors in „hybrid war“ was mostly directed to non-state actors as Taliban, al-

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<sup>8</sup> Frank G. Hoffman, *Conflict in the 21<sup>st</sup> Century – The Rise of Hybrid Wars*, Potomac Institute for Policy Studies, Arlington, Virginia, December 2007. p. 8.

<sup>9</sup> *Ibidem*

<sup>10</sup> Frank G. Hoffman, *Hybrid warfare and challenges*, JFQ / issue 52, 1st quarter 2009.

<sup>11</sup> William S. Lind, Keith Nightengale; John F Schmitt; Joseph W Sutton; Gary I Wilso, *The Changing Face of War, Into the Four Generation*, Marine Corps Gazette, October 1989, p. 23

<sup>12</sup> William S. Lind, *Understanding Fourth Generation of War*, Military Review, October 2004, p.13.

<sup>13</sup> Frank G. Hoffman, *Conflict in the 21<sup>st</sup> Century – The Rise of Hybrid Wars*, Potomac Institute for Policy Studies, Arlington, Virginia, December 2007. p.18.

<sup>14</sup> *Ibid*, p.14

Qaeda and, especially Hezbollah. The reason for putting an emphasis on research into non-state actors in a „hybrid war“ can be found in the failure of the conventional US military presence in asymmetric conflicts in Iraq and Afghanistan, as well as their inability to stop or defend from the Al Qaeda terrorist attack “9/11”.

Thus, in the first decade of using the term „hybrid warfare“ its meaning pointed to the success of a comparatively weaker military opponent in the conflict with the technologically and numerically superior US Armed Forces in Afghanistan and Iraq. Thereby, at the beginning of the new millennium, the concept of „hybrid warfare“ has represented the analytical construct in identifying and considering a wider range of newly emerging changes in the battlefield that challenged the US Armed Forces at tactical and operational levels. In fact, it pointed to the increasing presence of unconventional methods of warfare applied by non-state actors to which the powerful conventional Armed Forces of the United States and its Western allies did not have an effective conventional response. At that period, the term „hybrid warfare“ was used to describe and explain the „irregular warfare“ conducted by non-state actors in a conflict where they are faced with superior conventional state power.

„Hybrid war“ has become a product of contemporary security environment. As Dupont noticed: „The state on state conflicts on 20<sup>th</sup> century are being replaced by 'hybrid wars' and asymmetric contents in which there is no clear cut distinction between soldiers and civilians and between organized violence, terror, crime and war“<sup>15</sup>. The emergence of this concept has influenced a new way of thinking in the field of military science. Therefore, as Walker said: “'Hybrid warfare' presents a mode of conflict that severely challenges America's conventional military thinking.”<sup>16</sup> It targets the strategic cultural weaknesses of the American Way of battle quite effectively. Its main characteristics, convergence and combinations, occur in several modes. This form of conflict challenges long-standing American conception of fighting a war, and will continue to thwart the Western core interests and the world order. However, the rise of „hybrid warfare“ does not represent the end of traditional or conventional warfare, but it does represent a complex factor for defense planning in the 21<sup>st</sup> century. The increased effectiveness and lethality of non-state actors within hybrid war, and the symbiotic relationship that exists between sponsor (state or non-state) and client (non-state) is another variable that differentiates modern hybrid war from traditional forms of conflict.

When we analyze genesis of development and use of the term „hybrid warfare“ we can conclude that in Western Europe, except Great Britain, considering and using the term „hybrid warfare“ was quite different than in the United States. Western European countries were not exposed to the problems of waging a war in a non-traditional way as America was in the Middle East during the so called „unipolar moment“. Britain was a reliable ally of the United States participating in the Afghan and Iraqi wars in 2001 and 2003. Having experienced issues with a new way of waging a war, „British officers have

<sup>15</sup> Alan Dupont, *Transformation or Stagnation? Rethinking Australia's Defense*, Strategic and Defense Studies Centre, The Australian National University, Canberra, 2002, p.2

<sup>16</sup> Robert G. Walker, Spec Fi: The U.S. Marines Corps and Special Operations, Master's Thesis, Monterey, CA, Naval Post Graduate School, December 1998. In this earlier work Walker described the Marine Expeditionary Unit as “a Hybrid Force for Hybrid Wars”, but he did not focus on wider meaning of term “hybrid war” or “hybrid warfare”.

moved ahead and begun the hard work of drawing out implications and the desired counter capabilities required to effectively operate against 'hybrid threats'. In 2007, the British have gone past American doctrine writers and already incorporated 'hybrid threats' within their construct for irregular war."<sup>17</sup> Other European countries did not take a significant part in these wars and consequently the consideration of the phenomenon „hybrid warfare“.

## European Political Adaptation of the Usage of Term „Hybrid Warfare“

The meaning and usage of the term „hybrid warfare“ have considerably shifted in the period between 1998 and 2014, and the turning point represents the Ukrainian crisis. Namely, in the first period of development of the concept „hybrid warfare“, which lasted as we mentioned earlier from 1998 until 2014, from the first use to the Ukrainian crisis, „hybrid war“ included four methods that could be applied by both state and non-state actors. As Hoffman defined, those modes of warfare are conventional capabilities, and irregular tactics that include terrorism, indiscriminate violence and coercion, and criminal disorder. However, although both non-state and state are listed as actors, the primary focus was on non-state actors as actors on the battlefield in places like Chechnya, Lebanon or Afghanistan. Therefore, the first phase of evolution of the term „hybrid war“ represents mainly non-state approach to consideration of this phenomenon. Hoffman did recognize state as an actor, but he limited it to the situation in which Iraq was in 2003. „Hybrid challenges are not limited to non-state actors. States can shift their conventional units to irregular formations and adopt new tactics as Iraq's *Fedayeen* did in 2003“.<sup>18</sup> Therefore, he believed that state could be a „hybrid war“ actor only if irregular tactics were applied such as the organization of terrorist groups. Due to the events that took place in 2014, the term „hybrid war“ emerged from the framework defined by Hoffman.

In 2014 Ukrainian crisis has changed a way of thinking in the West about „hybrid warfare“, mostly in Europe. Although experts debate about the fact that „hybrid war“ began in foreign literature long before the Ukrainian crisis, this event represented a trigger that directed attention of European experts to research of the „hybrid war“ phenomenon. The term „hybrid war“ or „hybrid warfare“ rose to prominence in defense and policy circles, as well as in the media after the Russian annexation of Crimea. It was dragged out from the relative obscurity of military theory circles to become a mainstream term used to describe a myriad of seemingly different security and defense challenges to the West<sup>19</sup>. The study of this phenomenon has largely been deprived of research curiosity and criticism, which resulted in the hyper production of papers on this topic. Western observers have fallen into currently familiar parlance for describing the Russian annexation of Crimea and sub-

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<sup>17</sup> *Countering Irregular Activity within a Comprehensive Approach*, Joint Doctrine Note 2/07, United Kingdom, March 2007.

<sup>18</sup> Frank G. Hoffman, *Hybrid warfare and challenges*, JFQ / issue 52, 1st quarter 2009, p.37

<sup>19</sup> Erik Reichborn-Kjennerud, Patric Cullen, *What is Hybrid Warfare*, Policy Brief 1/2016, Norwegian Institute of International Affairs, 2016.

sequent invasion of the Eastern Ukraine. Frequently termed Russian „hybrid war“ against Ukraine is seen as a threatening precedent, even a likely model for future conflicts on Russian periphery. In this view, the Russian campaign against the Baltic States, Kazakhstan or even Poland might employ a variety of tools ranging from conventional to irregular combat operations, sponsorship of political protests, economic coercion, and powerful information campaigns.<sup>20</sup> According to Western opinion, mostly in Europe, Russia considers the Baltic States to be part of its inherent sphere of influence. In these countries, especially in Latvia and Estonia, there was a concern that Russia would seek to use the Russian minority to gain influence in the Baltics, to use subversion to justify conventional attacks, or to use covert action to seize territory. At the heart of many analysts' and policymakers' concern is the fear that Russian actions will appear ambiguous, which may impede a response from the EU and NATO, given the need for consensus on a decision by these organizations.<sup>21</sup>

According to Kofman's and Rojansky's opinion, „hybrid war“ may become the defining label for Russian operations in Ukraine, but on closer examination it misses the point. „Hybrid war“ can hardly be considered the definitive doctrine for Russian future power projection in its neighborhood, much less a model that could be easily reproduced in the far-flung and diverse corners of the post-Soviet space. Rather than a genuine strategic concept built from the ground up by the Russians themselves, „hybrid war“ is merely a label attributed to Russian actions in Ukraine by the West, in an effort to make sense of cascading phases of the security crisis in which all sides except Russia seem to have been caught off balance. Moreover, the discourse around „hybrid war“ mistakenly enfolds Russian investment in shaping global public opinion, which may pose challenges for Russian neighbors and the West, and it has much broader, more ambiguous and often inchoate aims.<sup>22</sup> However, there are other, different opinions that point to the exclusivity of Russia in waging the „hybrid war“. They come mostly from European countries in the Russian neighborhood, that is, from its zone of immediate influence and interest. As Bettina Renz said, „in the view of many Western analysts it is the non-military tools, such as information, that are seen as the biggest threat emanating from Russia today. However, the Crimea operations have also led to concerns about the implications of Russian military modernization more broadly, as it is not yet clear to what extent improved capabilities will go hand in hand with more forceful or hostile intentions.“<sup>23</sup>

The nature of Russian involvement in the Ukrainian crisis was an incentive for such thinking in the West, especially in Europe. The world took Russian swift achievement of political objectives in Crimea without the need to fire a single shot with surprise. Non-military instruments and the use of information in particular were important factors in the achievement of Russian victory. Russian use of broadcasting tools for propaganda and psychological operations as the part of a broader information campaign caught both Ukraine and the West with surprise. That approach in Crimea appeared especially im-

<sup>20</sup> Michael Kofman, Matthew Rojansky, *A Closer look at Russia's "Hybrid War"*, Kennan Institute, Kennan Cable No7, April 2015.

<sup>21</sup> Andrew Radin, *Hybrid Warfare in the Baltics - Threats and Political Responses*. RAND Corporation, 2017, p.1.

<sup>22</sup> *Ibidem*

<sup>23</sup> Bettina Renz, Hanna Smith, *Russia and Hybrid Warfare –Going Beyond The Label*, Finnish Prime Minister's Office, Government's analysis, 2016.

pressive because it stood in stark contrast to past military interventions. The Chechen wars and the war with Georgia in 2008 were criticized for excessive use of force and they were seen as poorly executed campaigns based on the lack of coordination, outdated equipment and poor strategy. Throughout much of the post-Soviet period the idea that the Russian military was outdated and stuck in the Cold-war thinking dominated the Western perceptions, so the success of the unconventional campaign in Crimea was particularly unexpected.<sup>24</sup> The explanation of Russian foreign and security policy as „hybrid warfare“ might be convenient, but the concept crucially does not explain anything about Russian actions, intentions or aims. In other words, what, specifically, would be the goals of Russian „hybrid warfare“ campaign against the Europe and West at all?

The implications of the Russian Great Power status in respect of Europe are the most complex and ambiguous, both for Russia and Europe. In fact, an important root cause for current tensions and fears of Russian „hybrid warfare“ against the West is linked to Russia's complicated relationship with Europe. The optimism of the early 1990s held that Russia would be democratized and become a part of the normative and value framework of EU enlargement. This situation has never happened and it is the most important reason why Russia has run into the biggest difficulties with its Great Power identity vis-à-vis Europe. Russia would like to be an equal member in the club of European Great Powers, but at the same time, as a Great Power, it does not want to be told what to do. Actually, Russia would like to be a Great Power that is in great relation with the European countries, but it does not want to be forced to adopt the European normative and value framework. For Russian relationship with the EU this has meant that it has no interest in the strong Europe as long as it is not accepted as a European Great Power on its own terms. Rather than isolating itself from Europe, Russia has opted to ensure its political involvement in Europe by tapping into political forces that are critical of the EU, critical of incumbent governments and are generally pursuing a populist agenda. These can be far-left forces rejecting the Western capitalism and standing for anti-Americanism or far-right parties propagating anti-liberal ideas (such as anti-immigrant sentiment) or EU critical political movements. Such „meddling“ has recently been interpreted by some observers as evidence of Russian „hybrid warfare“ campaign against the West<sup>25</sup>. Clearly, there is a sense that Russian foreign policy towards Europe has become more assertive and even aggressive, especially compared to the Medvedev years. The 'Hybrid warfare', in the eyes of some observers, seems to explain this change and a multitude of Russian actions, such as its attempts to seek influence in Europe by various information means, under one convenient umbrella. However, the explanation of Russian foreign policy to Europe as a campaign of „hybrid warfare“ tells us very little about what has actually changed or what exactly Russian intentions are.

Such political turn of Russia has not only had an impact on neighboring states, but in the whole Europe. A direct reflection of such behavior is the rethinking of the NATO and EU positions as organizations, whose members of the state felt threatened by the Russian influence.

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<sup>24</sup> Sam Jones, Ukraine: Russia's new art of war, The Financial Times, 28th August 2014, <https://www.ft.com/content/ea5e82fa-2e0c-11e4-b760-00144feabdc0>.

<sup>25</sup> *Russia accused of clandestine funding of European parties as US conducts major review of Vladimir Putin's strategy*, The Telegraph, 16<sup>th</sup> Jan 2016, <http://www.telegraph.co.uk/news/worldnews/europe/russia/12103602/America-to-investigate-Russian-meddling-in-EU.html>

However, by interfering with NATO and EU, the politicization of the „hybrid warfare“ concept continued. In response to Russian „hybrid war“, NATO and EU have analyzed implications of that situation on their security and they had adopted numerous strategic documents. At first, the European NATO members were in a very delicate and challenging situation. Namely, after the Ukrainian crisis, the Baltic NATO states were intimidated because they believed that they were also in danger, but at the very same level they were afraid that NATO does not have the mandate to protect them. According to NATO Article 5 the *“(P)arties agree that an armed attack against one or more of them in Europe or North America shall be considered an attack against them all”*. Since the Crimean operation was not an armed attack, or any kind of traditional war, but the operationalization of a new form of warfare, the key question was to what extent NATO legal framework was ready to deal with modern warfare. NATO has decided to take on an ambitious task: to develop a set of tools to deter and defend against adversaries waging hybrid warfare. In 2014 NATO adopted the *Readiness Action Plan (RAP)* as a means of responding rapidly to new threats as they present themselves along the eastern and southern flanks. This Plan provides a coherent and comprehensive package of necessary measures to respond to the changes in the security environment on NATO borders and further afield that are of concern to the Allies. It responds to the challenges posed by Russia and their strategic implications. It also responds to the risks and threats emanating from our southern neighborhood, the Middle East and North Africa.<sup>26</sup> In December 2015 NATO adopted the *Hybrid Warfare Strategy*, in which it has been defined how they are going to fight hybrid threats. This strategy was developed in order to speed up decision-making and improve its response to the kind of unconventional warfare that Russia has used in Crimea and eastern Ukraine with a new playbook expected to lay out the Alliance’s help for members if they come under pressure from Russia or another country.<sup>27</sup> Moreover, in April 2017 several European members of NATO Allies formally agreed to establish the European Centre of Excellence for Countering Hybrid Threats in Helsinki. Countering hybrid threats has become a priority for NATO as they blur the line between war and peace - combining military aggression with political, diplomatic, economic, cyber and disinformation measures. NATO counter-hybrid strategy includes strengthened coordination with the European Union, and also involves a new Intelligence Division, more training and exercises, and our work to actively counter propaganda with facts.<sup>28</sup> NATO understood what the main problem was with countering the „hybrid war“: unlike in conventional warfare, where it is possible to identify an enemy, NATO will find it difficult to agree on an intervention. Therefore, prevailing in „hybrid warfare“ presents NATO with an institutional challenge. In order to effectively counter hybrid threats, the Alliance will need to strengthen cooperation with international organizations, particularly with the EU.

Furthermore, the EU has taken steps to counter the Russian influence that is labelled by the phenomenon called „hybrid war“. As the EU concluded that its Member States have been increasingly exposed to „hybrid threats“ that comprise hostile actions designed to destabilize a region or a state, the EU also took steps in order to increase se-

<sup>26</sup> NATO’s Readiness Action Plan (RAP), October 2015, [https://www.nato.int/nato\\_static\\_fl2014/assets/pdf/pdf\\_2015\\_12/20151130\\_1512-factsheet\\_rap\\_en.pdf](https://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2015_12/20151130_1512-factsheet_rap_en.pdf)

<sup>27</sup> NATO adapts to countering the hybrid war: WSJ, 8 February 2016. <https://www.unian.info/world/1258925-nato-adapts-to-countering-hybrid-war-wsj.html>

<sup>28</sup> NATO welcomes opening of European Centre for Countering Hybrid Threats, 11 April 2017, [https://www.nato.int/cps/en/natohq/news\\_143143.htm](https://www.nato.int/cps/en/natohq/news_143143.htm)

curity of its members. *The European Agenda on Security*<sup>29</sup> from 2015 identifies three main priorities for the European security: terrorist and foreign terrorist fighters; serious and organized cross-border crime and cybercrime within which hybrid threats have been specifically recognized. In April 2016 the European Commission and the High Representative adopted the Joint Framework to counter hybrid threats and foster the resilience of the EU, its Member States and partner countries while increasing cooperation with NATO on countering these threats. The Joint Framework brings together the existing policies and proposes twenty-two operational Actions aimed at: raising awareness; building resilience; protecting Europeans online; preventing, responding to crisis and recovering and stepping up the cooperation between the EU and NATO, as well as other partner organizations.<sup>30</sup> Also, the EU *Global Strategy for Foreign and Security Policy* from June 2016 and its *Implementation Plan on Security and Defense*<sup>31</sup> from November 2016 made countering „hybrid threats“ as a priority, highlighting the need for an integrated approach to link internal resilience with the EU external actions. In order to make a contribution to strengthening the EU capacity to respond to „hybrid threats“, the European Commission proposed the European Defense Fund launched on 7<sup>th</sup> June 2017 with the proposed funding of about €600 million until 2020 and €1.5 billion annually thereafter.<sup>32</sup>

Having analyzed the abovementioned documents, we see that events in Ukraine are recognized and marked as a serious threat to the European security, and that a number of measures have to be implemented to counter „hybrid threats“. All those documents speak of working in conjunction with a variety of actors, especially NATO and EU, in order to improve resilience, security and continuity of governance in the face of hybrid threats. At the same time, the measures that result from these documents have contributed to the further politicization of the term „hybrid war“. This situation also points to another question: if the EU or NATO take more concrete steps in the „hybrid war“ will they become party to the conflict in the war with Russia? Or the politicization of the term of hybrid war can blur the boundaries enough in order to have ambiguity in place.

## State-Centric Approach to Consideration of the Term „Hybrid Warfare“

There is even greater importance of Ukrainian crisis in understanding the term „hybrid warfare“ besides considering the political background of Russian hybrid performances in Europe. It is absolutely clear that there has been evolution in understanding the term. The meaning and usage of the term itself have considerably shifted in the period

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<sup>29</sup> The European Agenda on Security, European Commission, 28 April 2015, [https://ec.europa.eu/home-affairs/sites/homeaffairs/files/e-library/documents/basicdocuments/docs/eu\\_agenda\\_on\\_security\\_en.pdf](https://ec.europa.eu/home-affairs/sites/homeaffairs/files/e-library/documents/basicdocuments/docs/eu_agenda_on_security_en.pdf)

<sup>30</sup> Security: EU strengthens response to hybrid threats, European Commission, Press release, Brussels, 6 April 2016. [http://europa.eu/rapid/press-release\\_IP-16-1227\\_en.htm](http://europa.eu/rapid/press-release_IP-16-1227_en.htm)

<sup>31</sup> Implementation Plan on Security and Defense, Council of the European Union, November 2016, [https://eeas.europa.eu/sites/eeas/files/eugs\\_implementation\\_plan\\_st14392.en16\\_0.pdf](https://eeas.europa.eu/sites/eeas/files/eugs_implementation_plan_st14392.en16_0.pdf)

<sup>32</sup> Security and defense: Significant progress to enhance Europe's resilience against hybrid threats – more work ahead. European Commission-Press release, 19 July 2017, [http://europa.eu/rapid/press-release\\_IP-17-2064\\_en.htm](http://europa.eu/rapid/press-release_IP-17-2064_en.htm).



between 1998 and 2014. Whereas, as Hoffman noted, „the hybrid construct was deduced from looking at the enemy,” the simple fact that different studies of „hybrid warfare“ reference different wars is a source of analytical confusion itself over the meaning and content of the term „hybrid warfare“. This can be most dramatically seen in how the concept of „hybrid warfare“ has evolved in Western defense circles, away from the discussion on an allegedly novel way of warfare conducted by non-state actors, and to a similarly novel, yet distinct, form of warfare conducted by states, most notably, but not only, by Russia in the Ukraine.<sup>33</sup>

As previously stated, „hybrid warfare“ was originally used to describe non-state approach to a new form of waging a war. However, Ukrainian crisis has changed this perception. Broad and generic similarities between Russian actions in Ukraine and previous examples of non-state „hybrid warfare“, most notably the „blurring“ of traditional concepts of warfare, its unfamiliarity, the use of non-military means, and the asymmetric relationship to Western conventional war fighting, have all contributed to labelling these Russian actions as „hybrid warfare“. <sup>34</sup> State-centric approach to the „hybrid war“ concept involves full integration of the military and non-military means of state power to achieve political goals, in which the use of force or the threat of force plays a central role. States with highly centralized abilities to coordinate and synchronize their instruments of power (government, economy, media, etc.) can create synergistic force multiplying effects. Specifically, state concept allows for operations that “target and exploit the seams” in Western-style liberal democratic societies that do not have similar coordinating offices or capabilities.<sup>35</sup>

Hence, the Ukrainian crisis significantly changes and expands the definition of the concept of „hybrid warfare“ in the sense that Hoffman had previously established. Even Hoffman argues that his definition is challenging and too short to consider the content of Russian involvement in the abovementioned crisis. His definition was limited to the combination of tactics that are related to violence and the irregular way of warfare of state and non-state actors, but not with non-violent activities that, according to the western view, the Russian Federation was conducting in Ukraine. Therefore, in paper from 2014 Hoffman is fenced from the idea that Russian involvement in Ukraine represents a „hybrid war“ and he offered a Maxwell’s term „unconventional warfare“ to be used for description of the Russian activity. Hoffman concluded: „While I prefer 'hybrid threats' to describe the opponent, I think that Maxwell’s 'unconventional warfare' with an updated definition that incorporates aspects of contemporary conflict, might be adapted to capture today’s evolution. Activities traditionally included within subversion and counter-subversion can be added to the definition to make it sufficiently robust. Perhaps 'unconventional conflict' is a compromise that expands the concept beyond a narrow military vision of warfare”.<sup>36</sup> However, regardless of Hoffman’s fencing in determining the Rus-

<sup>33</sup> Erik Reichborn-Kjennerud, Patric Cullen, *What is Hybrid Warfare*, Policy Brief 1/2016, Norwegian Institute of International Affairs, 2016.

<sup>34</sup> John Vandiver, *SACEUR: Allies must prepare for Russia 'hybrid war*, Stars and Stripes, 4th September 2014, available at: <http://www.stripes.com/news/saceur-allies-must-prepare-for-russia-hybrid-war-1.301464>

<sup>35</sup> Erik Reichborn-Kjennerud, Patric Cullen, *What is Hybrid Warfare*, Policy Brief 1/2016, Norwegian Institute of International Affairs, 2016

<sup>36</sup> Frank G Hoffman, *On Not-So-New Warfare: Political Warfare vs Hybrid Threats*, War on the Rocks, July 28, 2014, <https://warontherocks.com/2014/07/on-not-so-new-warfare-political-warfare-vs-hybrid-threats/>

sian activities as „hybrid“ and proposing Maxwell's „unconventional warfare“ as more appropriate, the term „hybrid warfare“ has gained its primary place in the exploration of the Russian appearance in the Ukrainian crisis within Western, especially European, political, media and academic circles. The term „hybrid warfare“ comes out from narrowly professional military circles and gains wider Western political, media and academic attention. At the same time, the politicization of the use of the term is incorporated within the Western academic discussions on the mentioned issues, which lose their scientific basis. The question that arises is what circumstances influenced the politicization of this term. The answer should be sought in the American fear of an aroused challenger like Russia and China, and also a European fear, especially the eastern European countries that once were under the Soviet cap of Russian aggression. This fear triggered the politicization of the use of the term „hybrid war“ and its withdrawal from the framework established by Hoffman.

Thus, after the 2014 event, Russia has been recognized as a „hybrid war“ actor, which marks a transition and transformation from the non-state to the state approach of understanding the „hybrid warfare“. The „hybrid war“ theorists have not expected such transformation, which resulted in the fact that the concept was upgraded only after it occurred in practice. The first question that arises is why the activities of Russia are under the term „hybrid war“. Is there any similarity with previous understanding of war, or better term could not be found? The current war in Ukraine partially meets Hoffman's criteria for a hybrid war in the part r related to the use of violent conventional and irregular methods. As Hoffman asserts that in 2006 conflict Hezbollah „demonstrated a number of state-like military capabilities“, like that there is a number of state-like military capabilities being used by the Russian-backed rebels. Also, there is a high level of operationally and tactically directed coordination taking place between the pro-Russian rebel forces and the Russian military. Those similarities between the Russian activity and non-state actors in the past, especially „blurring“ the difference between classic and irregular concept of war, the use of conventional and unconventional ways and means, represents the characteristics that have contributed to labelling these Russian actions as „hybrid war“.

Some observers can be confused with this conclusion, and say that guerrilla and conventional fighting, economic, cyber and information war occurred in Ukraine. Someone else can notice that the mentioned characteristics are actually the elements of „hybrid war“. The situation in Ukraine has put into the forefront not only the means that can be used, but the fact that the state is in the focus of a „hybrid war“. The introduction of the state into the core of the „hybrid war“ concept leads to new difficulties. The single critical expansion and alteration of the „hybrid warfare“ concept when applied to states is the strategically innovative use of ambiguity. Ambiguity has been usefully defined as „hostile actions that are difficult for a state to identify, attribute or publicly define as coercive uses of force”.<sup>37</sup> Clearly, in a situation that is not clear it is difficult to carry out security assessments and make the right decision on further activities.

The concept of „hybrid war“ gives the luxury of a wide range of possible choices of one or more actions like, for example, aggregated impacts in cyberspace, information space or even criminal activities involving kidnapping and killings. Such actions are usu-

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<sup>37</sup> Andrew Mumford, Jack McDonald, *Ambiguous Warfare*, Report produced for the DCDC, October 2014.

ally spread over time and give the impression that they are not connected together in any way, which creates a large degree of ambiguity.<sup>38</sup> Ambiguity is used to complicate or undermine the decision-making processes of the opponent. It is tailored to make a military response, or even a political response. In military terms, it is designed to fall below the threshold of a war and to delegitimize (or even render politically irrational) the ability to respond by military force.<sup>39</sup> As Reichborn-Kjennerud and Cullen noticed, these principles of ambiguity can be operationalized in many ways, from the tactical to the strategic way. At a strategic level, state-centric „hybrid war“ is designed to avoid „conventional war“. It targets perceived „red lines“ or thresholds of its opponents and operates below them; it finds „gray zones“ where these red lines are not articulated and exploits these undefended spaces; and it hides its military means while emphasizing non-military means to achieve its political goals. Ambiguity in the form of plausible deniability can be achieved by hiding and denying agency through the use of proxies, non-attributable forces (e.g. little green men) and attacks (e.g. cyber). It can also be achieved through the use of non-military comprehensive state power that is difficult to characterize as coercive force, thus limiting the ability to legitimize responses. At a broader level, „hybrid warfare“ is also ambiguous both because it operates outside of Western perceptions of war as a violent clash of kinetic forces, and because it blurs the distinction between war and peace and the beginning and end of hostilities.<sup>40</sup>

Therefore, the main advantage of the state involvement in a „hybrid war“ is the fact that the state can be labelled to participate in a classic war that is illegal. By doing so, it can covertly use military means and avoid condemnation, or to accuse someone else and thus avoid responsibility. Moreover, when a state uses non-military means, it prevents the opposing party from providing an adequate response, which could otherwise be used in the classic war. Thus, great influence on policy decisions in ways that complicate and slow ability to respond effectively has been made. Raising the boundaries of the state of war and peace, hybrid war introduces confusion from which the state actor benefits.

Some authors in this already confusing situation introduce a new degree of ambiguity in which the politicization of the term „hybrid“ as the core of the transformation of the „hybrid war“ from the non-state to the state, identifies the war with the „political war“. Chivvis in his paper said that „political warfare“ is similar to, but not identical to a „hybrid warfare“. Many terms are approximate synonyms for „hybrid warfare“, and each has a slightly different meaning. Sometimes „hybrid warfare“ and „political warfare“ are used synonymously. Indeed, there is a great deal of overlap in the instruments and methods required for each. Yet, there are also subtle differences. „Hybrid warfare“, for example, might aim at military, as well as political objectives. „Political warfare“ aims directly and exclusively at political systems and the broader polities in which they exist. „Hybrid warfare“ clearly includes the use of military force, and at the limit, even conventional military operations.<sup>41</sup>

<sup>38</sup> Miroslaw Basnik, *Russia's Hybrid War in theory and Practice*, Journal on Baltic Security Vol 2, Issue 1, 2016, p. 159.

<sup>39</sup> Andrew Mumford, Jack McDonald, *Ambiguous Warfare*, Report produced for the DCDC, October 2014

<sup>40</sup> Erik Reichborn-Kjennerud, Patric Cullen, *What is Hybrid Warfare*, Policy Brief 1/2016, Norwegian Institute of International Affairs, 2016.

<sup>41</sup> Christopher S. Chivvis, *Hybrid war: Russian contemporary political warfare*, Bulletin of the Atomic Scientists, 2017, p. 317.

Whether we call this type of war political, hybrid or “gray-zone conflicts” we must not ignore its essence - the state tends to achieve its major foreign policy goals. The similar resources are also used perfectly synchronized: population-centric approach, political destabilization, cyber tools, economic influence, covert action, military intelligence, or other operatives; economic sanctions, political pressure and propaganda. Such considerations lead us away from the essence of the state-centered understanding of the „hybrid war“ – the emergence of politicization of the „hybrid war“ in which Russia is the main actor. Russian action towards Ukraine was stigmatized due to the fear of not only the Russian neighboring states, but the whole world. The unpredictable nature of the Russian activity through the prism of a „hybrid war“, and the impossibility of providing an adequate response from other actors, mark the main features of the European security scene today.

## *Conclusion*

During the history, due to the development of society and technological innovations, types of wars have been changing and transforming. Therefore, we have been introduced with the concepts of the „classic war“, „irregular war“, „special war“, then the „Fourth Generation wars“, „compounding wars“. Today, the focus of the military experts and academics is on the term „hybrid wars“.

The „hybrid warfare“ is most commonly used term worldwide to explain the characteristics of the new concept of war, which certainly points to the specificity of contemporary war conflicts in relation to the previous classic war ones. At the beginning, it was originally used by the US Armed Forces to describe the growing sophistication and complexity of non-state actors on the battlefield in places like Chechnya and Lebanon, and later in Afghanistan and Iraq. However, with the political adaptation of the term, since the beginning of Ukrainian crisis, the perception of the „hybrid warfare“ concept has evolved in Western defense circles, away from the discussion on a novel way of warfare conducted by non-state actors, and to a similarly novel, yet distinct, form of warfare conducted by states, most notably by Russia in Ukraine.

The contribution to such changes in thinking about „hybrid war“ has mostly come from the European countries in Russian neighborhood that felt threatened by the novel Russian foreign policy at the beginning of the new century. Thus, neither the US nor Europe remained immune to events in Ukraine. Faced with a growing power that uses unconventional means to which they do not have an adequate response, they have become frightened by the Russian activities. As the answer to the growing threat, experts from the US and Europe have politicized the term „hybrid war“ by defining Russia as the main actor in this kind of war. The fact that supports this claim is reflected in the hyper production of papers about „hybrid war“ in which Russia is the main actor. Although the scientific and practical value of these works remains questionable, they influence the creation of the opinion of the expert and general public. Also, politicians surge who will more and more often charge Russia for leading the „hybrid war“, which makes further influence on the politicization of this phenomenon.

Some European scholars rejected this attitude, but most of them have hardly advocated such view on the Russian activities in its interest zone. The reasons for this lie in complex and ambiguous relations between Russia and Europe. Thus, the meaning and usage of the term itself in the European academic, political and military circles have considerably shifted in the period since Ukrainian crisis. Today, on the case of the use of the term „hybrid war“, we can see most clearly the fear of the West from the strong and unpredictable Russia.

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# HYBRID NATURE OF EXTREMISM – COHESIVE CHARACTERISTICS OF ETHNO-NATIONALISM AND RELIGIOUS EXTREMISM AS GENERATORS OF BALKAN INSECURITY\*

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It will be no mistake to say that the region of the Balkans is the site with 'good soil' for conflicts. A significant number of scholars, who have analyzed the nature of conflicts in the Balkans, recognized the 1990s wars as religious conflicts. Others point out that the nature of these conflicts is based on ethnic and ethno-nationalist reasons. Taking into account the complex character of the „Balkans powder keg“, it could be said that both views are correct. But then again, each of these conflicts had (and has) certain differences that support the thesis by which this particularly sensitive issue must be analyzed with exclusive respect for the role of religion. Namely, the role of religion is prominent and significant in almost all Balkan conflicts inspired by ethno-nationalist ideas and passions. In this regard, the main objective of this paper is to emphasize the so-called 'hybrid' character of the Balkans antagonisms and conflicts, which have extremist-religious and ethno-nationalist components at the same time.

Key Words: *Balkans, violence, religious-funded extremism, ethno-nationalism, hybrid conflict*

„If they want peace, nations should avoid the pin-pricks that precede cannon shots.“  
Napoleon Bonaparte

## Introduction

One of the most important characteristics of a man as a social being is identification with other people and collectivities. By identification with common symbolic entities, which impersonate nation and/or religion, the single individual (one person) provides the general framework of orientation in society. Furthermore, to acquire national

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identity, a person has to identify himself/herself with nation, and that identification influences determination, as well as preservation of their national affiliation sense.

Nevertheless, consciousness of people about themselves, together with the created national identity, is still not nationalism. Only when "national consciousness grows into national ideology, then there is work with nationalism".<sup>1</sup> The transition from man to ideologue, according to Šušnjić, is almost imperceptible. „Magnificent of own nation and its glorious past, leading to the contempt of all other peoples and their history, and there is no future and ideologies that could eradicate or suppress deeply ancient tribal instincts whose term nationalism“<sup>2</sup> highlights Šušnjić and continues: „about the small differences spread large clashes, preceded by organized hours of hate“.<sup>3</sup> Julien Benda, referring to nations as a particularly vulnerable and offensive organism, points out that „the nations have become susceptible as persons (mothers, fathers)“.<sup>4</sup>

Thus, it is obvious that nationalism gains its meaning only in symbiosis with national (nationalistic) ideology. This relation is described in a symbolic and very humorous way by Fernando Fernández-Savater Martín in „Three short reflections on nationalism and terrorism“<sup>5</sup> when the analyses of 'isms' point out that they indicate „not obviously emphasizing something that is obvious, just like words ending with 'itis' indicate on inflammation, but not just that someone has some organ“. In the same way, an individual can belong to the particular nation, and not to be a nationalist, the same as one „can have the bronchi, and that does not suffer from bronchitis“.<sup>6</sup>

In the same way, since national ideology crucially defines nationalism, ethno-nationalist ideology has established a coordinated system of ethno-nationalists. Ethno-nationalist ideology could be observed through its main features:<sup>7</sup> *simplification* (of otherwise complex social reality), *dichotomization* (who is not with us is against us), *rigidity* (for ethno-nationalists it is interpreted as consistency, principle), *demarcation* (to know where is „ours“, and where „theirs“ starts from), *uniformity* (uniformity enhances cohesion), *degradation of rational* (emotions ahead of nous), *populism* (populism thrives best in a society that is cohesive and uniform), *anti-individualism* (denial of individual right to diversity), *moralism* (moral is only that which supports group-national goals), *traditionalism* (containment and orientation to the past), *longing for immortality* (good deeds ethos settled as the way to eternal life-openly flirting with religion), *biologism* (the so-called „purity of ethnicity“, the cleanliness of nation, the increase of birth rate as a duty), *extremism* (radical demands accompanied by „now, all, rigid, fiercely“– the essential characteristics and, in a way, the content of many of the aforementioned physiognomies).<sup>8</sup>

<sup>1</sup> Đuro Šušnjić, *Religija II, značenja, teorije, preplitanja, susreti*, Čigoja štampa, Beograd, 2009, p.150.

<sup>2</sup> Ibid.

<sup>3</sup> The term „enduring hatred“ can be considered a novelty in conflict analysis, which is interpreted by the fact that hatred is extremely intense and deliberate in public opinion of conflicting parties. Šušnjić quotes the example of Rome, which „concurrent the Greek miracle in military but not spiritually: still remained deep respect for Greek culture“.

<sup>4</sup> Žilij Benda (Julien Benda), *Izdaja intelektualaca*, Socijalna misao, Beograd, 1996. p. 25.

<sup>5</sup> Fernando Savater, „Tri kratka oglada o nacionalizmu i terorizmu“ (203-208) in Mikel Asurmendi (ur.), *Identitet i nasilje, XX vek*, Beograd 2002, p. 207.

<sup>6</sup> Ibid.

<sup>7</sup> Classification of characteristics of ethno-national ideology (clarification of author), in: Nenad Kecmanović, *Etnonacionalizam*, Izabrana dela; 1-4; tom 2, Clio, Beograd, 2014, p. 118 - 133.

<sup>8</sup> Ibid.



It is important to note that certain features of ethno-nationalist ideologies are not identically (or with the same intensity) expressed in all ethno-nationalist movements. However, they are as a rule an example of preconceived attitudes and beliefs, largely monolithic and resistant to the possibility of any change.

Moreover, analyzing these characteristics that are specific 'doctrinal document' of the ideologues of ethno-nationalism, in many of them closeness with religious vocation could be notified. Indeed, if we put ethno-nationalism in the frame of the youngest monotheistic religion, it could be compared with the fundamentalist wing of Sunni Islam-Wahhabism.

Once established and strengthened at the level of minority communities, ethno-nationalism became their most common instrument in an effort to achieve greater autonomy or independence, which broadly opened the door for ethno-nationalism to gain its own secessionist<sup>9</sup>-*ethno-separatist* form. Due to the fact that ethno-nationalism makes the essence of all secessionist movements, „Ethno-nationalist ideology is necessary to convince members of their target group that the state is not legitimate“.<sup>10</sup> The dissolution of SFRY, with separations in successive and recursive manner, is the exact example of unified ethno-nationalism with elements of religious extremism in growing form of ethno-separatism.

## Conflicting potential of ethno-nationalism

The principle *cuius regio, eius natio*<sup>11</sup> in Eastern Europe was actually unknown in the 19<sup>th</sup> century. The history of the 20<sup>th</sup> century is chronicled with rapid moving and prosecution of ethnic groups, aimed at withdrawing aspiration to national borders by ethnic-national principles. According to Urs Altermatt, ethnic-nationalism has started from the utopia that a state should be adjusted to ethnicity/nation.<sup>12</sup> This approach has brought much destruction in Europe during the 20<sup>th</sup> century. In discussions on the theme of conflict in the modern world, Amartya Kumar Sen suggests that those conflicts are most frequently products of identity friction on the basis of ethnicity, religion, and culture, and that with appropriate incentives, tended awareness of identity within a group of people can be turned into a powerful weapon brutally treated by another.<sup>13</sup> The high positioning of ethnicity and its interactive correlation of religion and culture has contributed to the fact that a significant number of scholars, who deal with the phenomenon of nationalism, em-

<sup>9</sup> According to James Crawford, secession creates a state through the use of force or by threat of force, without the consent of the former sovereign state. (James Crawford, *The Creation of States in International Law*, Second Edition, Oxford, Clarendon Press, 2006, p. 375). Julie Dahlitz suggests that secession could be recognized as the act when a substantial part of the population of a particular territory, which is a part of a state, expresses, by word or deed, the desire to become sovereign or to approach another sovereign state and become part of it (Julie Dahlitz, *Secession and International Law, Conflict Avoidance*; Regional Appraisals, The Hague, TMC Asser Press, 2003, p.6).

<sup>10</sup> Aleksandar Pavković, Petar Radan, *Stvaranje novih država, teorija i praksa otcepljenja*, Beograd, Službeni glasnik, 2008. p. 266.

<sup>11</sup> „Who owns land, owns nation, as well“.

<sup>12</sup> Urs Altermatt, *Etnonacionalizam u Evropi*, Svjetionik (trans. Gajo Sekulić), Sarajevo, 1997.p. 52.

<sup>13</sup> Amartya Kumar Sen, *Identitet i nasilje – Iluzija sudbine*, Masmedia, Grafički zavod Hrvatske, Zagreb, 2007, p. 15.

braces the thesis that ethnic nationalism has a lot of characteristics, which made it justifiably regarded as a kind of modern 'secular religion'. John Hutchison suggests that nations become something that we could call 'surrogate religion',<sup>14</sup> and Anthony Smith<sup>15</sup> emphasizes that nationalism is a logical extension of traditional religions. This thesis was supported earlier by Harold Lasswell's arguments. Namely, Lasswell thinks that ethno-nationalism, as a secularized alternative to religious forms, is an ideal substitute for religion.<sup>16</sup> Berdyaev also concluded that fanaticism has religious origins, and that it easily exceeds national and political sphere.<sup>17</sup> The fact is that religious identity in pre-modern times was the basic form of collective identity, so the transfer to ethno-national identity is a logical starting point, primarily because it imposes itself as the new main mechanism of social integration, and disintegration, as well.

Namely, almost as much as it serves to collective cohesion, ethno-nationalism is also the cause and instrument of antagonisms among ethno-national communities. Segmentation into us and 'the others' is at the core of ethno-national concept. Dichotomization embodied in symbolic withdrawal and/or real border between us and 'them' is the essence of ethno-nationalist ideologies later embodied in acting operationalization of the ethno-nationalists. Speaking about the thematic characteristics of ethno-nationalist ideology, Kecmanović emphasizes *the theme of: vulnerability, culprit of all, victims and sacrifices, right or crucial moment* and finally, *revenge and retribution*.<sup>18</sup> Indeed, if we try to implement this matrix given by Kecmanović on the ethno-national ideology of the Balkans societies, we could find remarkable matching with generators and motives of conflicts.

In general, violence is the main force behind emergence and change of ethnic or ethno-national identity, either in more common sense of helping a nation, or forcing people to change or disguise their identity, which is a rarity, and not an unusual phenomenon. Antagonisms, conflicts, and finally wars, have often been the engine of building a nation, and the Balkans are certainly not an exception. In short, the wars in the former Yugoslavia and the processes of national homogenization that followed them, were primarily motivated, as Duijzings<sup>19</sup> suggested, by the need to create simple and unequivocal identities in the population, and to erase the elements of the mixture, 'pollution' and any kind of uncertainty that would endanger the newly created nation states. Therefore, it seems that violence in the creation of new states does not only result from conflicting and disparate identity, but, even more, it is mean for their creation.

<sup>14</sup> John Hutchinson, „Introduction: Global perspectives on religion, nationalism and politics“, in: R. Hefner, J. Hutchinson, S. Mels et. al. (edt.), *Religions in Movement: The Local and the Global in Contemporary Faith Traditions*, London, Routledge, 2013, p. 9.

<sup>15</sup> Anthony Smith, „Introduction: The formation of nationalist movements“, u: A. D. Smith, *Nationalist Movements*, London, Macmillan, 1976, p. 19.

<sup>16</sup> Harold Lasswell, „World Politics and Personal Insecurity, New York, Whittlesey“, 1935, 50-51, in: Nenad Kecmanović, *Etnonacionalizam*, Izabrana dela; 1-4; tom 2, Clio, Beograd, 2014, p. 285.

<sup>17</sup> Nikolai Berdyaev (Николај Берђајев), „О фанатизму, ортодоксији и истини“, Градина, Ниш, 1992. p. 6-9, in: Владета Јеротић, *Вера и нација*, Ars libri, Београд, 2004. p. 185.

<sup>18</sup> Nenad Kecmanović, *Etnonacionalizam*, Izabrana dela; 1-4; tom 2, Clio, Beograd, 2014, p. 134-143.

<sup>19</sup> Ger Dejzings, *Religija i identitet na Kosovu*, Biblioteka XXI vek, Beograd, 2005. p. 54.

## Conflict Potential of Religious Extremism

Since religion was endorsed on the throne of social reality, it represents the line of delimitation, or dividing line among identities of groups, and thus it has taken the significant place in contemporary national policies of great numbers of countries. Furthermore, national movements, which exist in the modern world, regularly have some religious tone, which could certainly become the source of extreme religious emotional state. Moreover, the nationalistic movements of the modern world, as a rule, follow a certain religious belief. „The reverse case, i.e. that extremist believers become nationalists-extremists, it is noticeably less precisely because they, by their unambiguous and inseparable ties, are already connected by a fanatic faith“.<sup>20</sup>

Religious antagonism in the Balkans got its culmination, perhaps more than in other parts of Europe, during the Second World War. Liberalism, which has inherited the tradition of religious tolerance and separation of church and state (secularization), could never fully articulate or effectively convey its ideals in the Balkans. The supporters of communism, while declaring themselves unequivocally as atheists, saw in religions the means by which the ruling elites kept their population submissive and did not show the least sense for religious tolerance. „In meanwhile, the protagonists of the extreme right politics, saw their chance in fostering religious conflict which is undoubtedly due to the fertile ground, inevitably lead to the strengthening of clerical-fascist ideas in the Balkans“.<sup>21</sup>

The end of the Second World War was labeled by the victory of the Communist movements in a large part of the Balkan Peninsula with the exception of Greece and Turkey. However, in most of the Balkans, ethnic and national identity has remained fixed and ‘hugged’ with religious one. Namely, Serbs, Bulgarians and Greeks were widely regarded as Orthodox, as well as Macedonians and Montenegrins (who passed through a characteristic process of national emancipation during this period), Slovenes and Croats as Catholics, and Turks, Bosniaks, as well as the majority of Albanians, were identified as Muslims.<sup>22</sup>

This constellation resulted in the specifically difficult situation for individuals and minority groups, whose ethnic identity did not match the religious one, same as those who are in itself were merged several national and religious identities. However, the dominance of communist ideology emphasized that the atheistic character stood in the way of operational articulation of political intolerance. On the other hand, the fact is that the Communists have done almost nothing to have efficient and sustainable construction of a more tolerant society, trying to distance all religions from the public sphere and often used religious communities in order to maintain political and economic monopolies.

Thus, at the end of the 1980s, the SFR Yugoslavia became an atheistic or agnostic society to a great extent, but at the same time it was inhabited by ethnicities that built

<sup>20</sup> Милован Суботић, *Екстремизам под окриљем религије – исламистички екстремизам на примерима БиХ и Р. Србије*, Медија центар Одбрана и Институт за стратегијска истраживања, Београд, 2015, p. 279.

<sup>21</sup> Ibid, p. 31.

<sup>22</sup> Vladimir Petrović, *Politika i religija na Balkanu: Od pluralizma do homogenosti; od suživota do asimilacije*, BOŠ, Centar za istraživanje religije, Beograd, 2013.

their identity with particularly strong support of religious affiliation with federal order and internal borders that were roughly crossed by ethnically mixed population. Therefore, the circumstances, which were reflected in the weakening of the state in the second half of the 1980s, the increase in tension between the elites of the federal units and the economic downturn of the country caused a rapid rise of nationalism, which was often manifested through the utilization of religious sentiments. The Serbian political elites identified their national interests with the space where there were numerous believers of the Serbian Orthodox Church, Croats forced the ideology of the defense of Catholicism, and the Bosniaks built their identity on the basis of belonging to the Islamic religious community. The policy of intolerance and untouchable ethnic and religious identities contributed to the outbreak of a civil war and the maintenance of confusion about its inevitability.

This peculiarity of the last war has led many theoreticians to the conclusion that the Balkans is trapped in religious and national intolerance. It went so far that the Balkans multi confessionals represented the inalienable cause of the conflicts that are the dominant characteristic of its past and which would inevitably be transferred to the future. However, religiously colored conflicts in the Balkans were the most commonly exploited religious differences by political factors and in the function of achieving the goals of the great powers, and the new national states, as well.<sup>23</sup> The communities of believers and their leaders, in this way, have found themselves in the focus of conflicting political and economic interests. Many of them often took part in these struggles and contributed to intolerance, since religious dignitaries in the Balkans were often influential political and military leaders such as John of Capistrano in the 15<sup>th</sup> century, Arsenije III Čarnojević in the 17<sup>th</sup> century, Bishop Petar II Petrović-Njegoš in the 19<sup>th</sup> century, Anton Korošec and Momčilo Đujić in the 20<sup>th</sup> century.<sup>24</sup>

However, there is no reason for conclusion of these conflicts' immutability in the religions of the Balkans and their assortment. In peacetime, in rare situations of political equilibrium, the Balkans peoples showed an enviable ability to overcome religious differences and build multi confessional communities. Even the strongest waves of violence failed to fully achieve the desired religious and ethnic homogeneity in the region, and when they partially succeeded, the price in human lives was extremely high.

Generally speaking, in discussions about religious extremism components we could easily fall into the deception that this form of violence steps out of the frame of political violence. However, taking into account the character of the commitment of extreme 'believers', we could notice the inextricable connection with almost all components of radical right extremism such as chauvinism, xenophobia, anti-liberalism, anti-Americanism, sexism and other similar ones. Furthermore, it seems that „this 'hybrid' extremism with elements of ethno and cleric-nationalism is, in fact, par excellence political extremism, which significantly influences the political identity and, consequently, the insecurity of the Balkan societies“.<sup>25</sup> However, Serbia is not spared these forms of political violence.<sup>26</sup> The

<sup>23</sup> Милован Суботић, *Екстремизам под окриљем религије – исламистички екстремизам на примерима БиХ и Р. Србије*, Медија центар Одбрана и Институт за стратегијска истраживања, Београд, 2015, р. 32.

<sup>24</sup> Vladimir Petrović, *Ibid*, 2013.

<sup>25</sup> Милован Суботић, „Екстремизам на мапи савремених асиметричних форми угрожавања безбедности“, у: *Идентификовање савремених асиметричних форми угрожавања безбедности*, (у штампи), Институт за стратегијска истраживања (р.1-60), Београд, 2017.

extremist verbal commitment, and often overt violence implemented by right-wing extremist organizations and individuals in Serbia often try to justify their actions under vindication of 'holy' Orthodox reasons. In communication they use the well – known flocules: „For the honorable Cross and golden freedom!“, „With faith in God, freedom or death!“ and others.<sup>27</sup> Some of the church dignitaries do nothing to prevent such phenomenon. Furthermore, „there is a great number of cases in which they often use speech and hyperbolas that in a civilized world could be recognized as language of hatred, and thus become a kind of spiritual movements for clerical-right extremist leaders and their followers“.<sup>28</sup> In their public performance with the characteristics of chauvinism, xenophobia, anti-liberalism, anti-Americanism, sexism, etc., which often cause outbreaks of open violence, the 'soldiers of extremism' in modern Serbia often declare that their 'mission' is in accordance with Orthodoxy (even more often in the use of 'sacred') and 'traditional values' of the Serbian people. Also, the dichotomy between umbrella institutions of believers, who practice the principles of the youngest monotheistic religion in Serbia („Islamic Community of Serbia“ and „Islamic community in Serbia“), as well as the actions of the radical Wahhabi movement, could be recognized as examples of extreme opportunities in the name of religion.<sup>29</sup>

## Hybrid character of the Balkan extremes

Both religious and ethnic nationalism are used, among other things, for integration or more collective integration of people. The origin of the word religion (*legare* - bind, connect) indicates that one of the essential functions of religion is to connect people with a certain top-level supreme authority (God), and also to connect them to the community of believers. A great deal of the protective function of religion such as protection from natural disasters, enemies, feeling of isolation, evil fate, etc., comes first of all from beliefs that what happens to people is not accidental, or is not the result of what is called the case or bad luck.<sup>30</sup> The feeling of belonging to a specific, clearly defined community such as the community of believers, and beliefs of people that belonging to certain religion directly means sharing the same fate of all those who are of the same faith, leads them to specific closeness, familiarity, thereby increasing their social integration.

Moreover, affiliation with certain ethno-national community connects people (mostly) with the same language, culture, beliefs, habits, myths, collective memories. As one of the basic forms of collective identity, ethno-national identity is at the same time one of the basic aspects of collective human integration. A unique power of the same by (ethno) national origin conditional collective integration of the people, is the fact that this form of

<sup>26</sup> The obvious connection of religious extremism with right - wing organizations indicates that religious extremism could be recognized as *par excellence* political question.

<sup>27</sup> Милован Суботић, „Екстремистичке тенденције као препрека у (пре)обликовању политичког идентитета Србије“, *Култура полуса бр. 21*, Нови Сад, 2013, (163-181), p. 175.

<sup>28</sup> Ibid.

<sup>29</sup> Ibid.

<sup>30</sup> Dušan Kecmanović, *Etnonacionalizam*, Beograd, Clio 2014. p. 286.

association is strongly emotionally colored because in it like in all other communities of people who share the same faith-*belief outweighs the knowledge, emotion over reason*<sup>31</sup>.

People are not indifferent to failure or disadvantages affecting their (ethno) national community. The majority of people personally feel the burden of difficult times of their (ethno) national collective because they have been identified with this type of community as its constituent part. Moreover, integration in (ethno) national community is so strong that in good and bad times, collective and personal destiny is largely equalized.<sup>32</sup> Historical experience shows that the latent tension between these two large different ethno-national groups could be easily transformed into an open antagonism and conflict. Furthermore, belonging to particular faith often includes different views of the world, lifestyle, habits, diet, and dress.<sup>33</sup>

On the other hand, separation into us and 'the others' is in the center of the ethno-nationalist concept and beyond ethno-nationalist view of the world. Dichotomization, the withdrawal of symbolic and realistic boundaries between us and 'them' is a very important part of every ethno-nationalist ideology and the practical action of ethno-nationalists. Symbiotic processes derive from the interaction of religions-ethnicity. They represent ethno-mobilization with pronounced religious narrative, „manipulation of the conceptual and symbolic universe of ethnic collectivity is the primary characteristic of the ethno-nationalism and its protagonists and carriers are called ethno-nationalists“<sup>34</sup>.

Jonathan Fox in his work<sup>35</sup> suggests how religion can cause a conflict among ethnicities or contribute to that conflict. 1) The religious view of the world is not just a definite interpretation of reality; it becomes an integral part of reality. Therefore, any kind of questioning such an indication of the world brings into question the world in which those who have adopted it live. This is often more than enough for conflict with those who have challenged us, our belief and our world. 2) The religious view of the world usually includes rules of behavior in very different circumstances and situations. The holy books consist of instructions on how to treat people of different faith and opponents of religion. It is said somewhere to be pursued with fire and sword. Such message, for example, is a requirement of keeping the Holy War. It is said somewhere to be tolerant of people of other religions, to respect their customs, culture, and way of life. However, it is difficult to find examples that some religious based nations which were waged war, but did not have any justification in the texts of the sacred books.<sup>36</sup>

Moreover, religion, besides the fact that it may mostly cause direct challenges and could accelerate the already existing conflicts, it could be an excuse for conflicts, which does not necessarily have anything to do with religious conviction. For example, religion could be pulled into a conflict by using its institutions to mobilize the population in order to achieve some political goals. Also, religion could be used as a source of legitimizing

<sup>31</sup> Ibid.

<sup>32</sup> Ibid.

<sup>33</sup> Dušan Kecmanović, 2014, p. 287.

<sup>34</sup> Silva Mežnarić, „Nacija i etnos u akciji: Etnonacionalizam i njegove paradigme“, *Migracijske teme*, Zagreb, 5/1989, (p. 113-121), p. 120.

<sup>35</sup> Jonathan Fox, Towards a Dynamic theory of Ethno - Religious Conflict, *Journal of Nations and Nationalism* 5, 1999, p. 431-463.

<sup>36</sup> Ibid.

every condemnation of valid procedures. The legitimizing influence of religion is reflected, inter alia, in the fact that a killer becomes a martyr. They sacrifice life for faith and therefore deserve to be glorified in this world (special cemeteries, monuments, mentioning their name during religious and state festivities, notation in memories on won and lost battles). Finally, in the other, sacred world they could not miss rewards and enjoyment of every kind.<sup>37</sup>

Religion and ethno-nationalism provide collective identity to people. The religious identity, which is older than the ethno-national identity, has been significant for ages, and it represents the fusion factor in crucial collective identity of an epoch. Nowadays, the ethno-national identity is the dominant aspect of the collective identity of people, regardless of whether the term 'national identity' refers to an identity that implies (and gives) belonging to a particular ethno-national collective. As it has already been pointed out, the first type of identity is an important aspect of the identity of a man, every human being, when it is within the boundaries of the national state to which it belongs and especially when it crosses them. The second kind of identity represents people as individuals belonging to a completely specific ethno-national cultural matrix and everything that it implies.<sup>38</sup>

In many cases the religious identity is an integral part of the ethno-national identity. These two identities are complemented and amplified; one implies the other, the other includes the first. This is more common in the environments in which the ethno-national concept prevails over the national concept of organizing social life, especially relations among people of different (ethnicity) nationality. Religious affiliation is especially powerful principle of distinguishing people of different ethno-national origin, when the other differences between them are small and unimportant. Also, „the religious factor has significantly contributed to the emergence of an ethno-nationalist movement in conditions where the minority population through religion differs from the dominant state culture/religion“.<sup>39</sup> The typical example of this statement is the ethno-nationalistic character of ethno-separatism in Kosovo and Metohija.

Finally, when religious and ethno-national affiliation coincide, as it is often the case, then the extremist matrix is manifested in a significantly enhanced and escalated division between us and 'them'. In this way the likelihood of antagonizing us and 'them' increases. The history of mankind is abundant with evidence of the accuracy of the last statement.

Within the scope of hybrid conflict concept, in which actual security agenda is widely recognized as 'Hybrid Warfare', ethno-nationalism and religious extremism have more than significant role in several aspects. Namely, in areas or regions of interest, ethnic-based religious frozen conflicts or notoriously recognized religion divides and antagonisms are useful tools for achieving controlled influence on behalf of power that has organized and managed a conflict, in hybrid way of its execution. Conflict potentials of ethno-nationalism and religious extremism have been previously elaborated in this paper. However, the non-conventional usage of violence in the military or conflicts usage of it by Clausewitz' theory has not been done yet. Namely, if one side successfully achieves its strategic aim by usage of ethno-nationalism and religious extremism without open

<sup>37</sup> Dušan Kecmanović, 2014, p. 288.

<sup>38</sup> Ibid.

<sup>39</sup> Urs Altermatt, *Etnonacionalizam u Evropi*, Svjetionik (trans. Gajo Sekulić), Sarajevo, 1997, p. 76.

declaration of war, then those two phenomena should be placed in the domain of hybrid security threats. Furthermore, considering contemporary analysis and critical observation of actual conflicts, we could conclude that hybrid warfare is not *de facto* conducted as the war in conventional understanding, and mostly as the concept of actual, geopolitical clash of interests.<sup>40</sup> Hybrid warfare embodies the whole range of various models of conflicts, which are carried out with conventional and unconventional tactics and engaged forces including violence and civil unrest and criminal activity.<sup>41</sup> If we consider conflict potentials of ethno-nationalism and religious extremism, their hybrid capabilities are more than obvious. Furthermore, hybrid warfare could be understood as a form of manifestation of strategic initiatives, which strive to accomplish aims by usage of possibilities observed according to the indicators of hybrid vulnerability as: dysfunctional state, the lack of state sovereignty, the existence of frozen conflicts, unresolved territorial disputes, the presence of arbitration or control of territory by supranational entities, ethnic and religious problems, separatism, extremism, unemployment, the existence of general poverty, long-term dissatisfaction of population with political and social solutions in leading a country, corruption, powerful criminal elements, institutions with separate centers of power and governance, etc. In the listed indicators, ethno-nationalism and religious extremism have significant contributing influence in the role of raising different forms of insecurity and hybrid security engagement. Moreover, if we locate ethno-nationalism and religious extremism through the scope of recognized pillars of acting forms of hybrid conflict concepts,<sup>42</sup> instruments for their implementation are more than noticeable: propaganda, information abuse, public diplomacy misuse, creation of extremist hubs at the Internet social networks, proxy support of separatist movements, abuse of cultural and religious humanitarian work, etc.

## Conclusion

Religion in the Balkans is a constituent element of the nation and nation state in a much greater extent than it is the case in Western Europe. The countries of Southeast Europe naturally understand themselves as cultural nations, in which the religious factor as an element of cohesion plays an important role. In the Balkans 'national religions' have much stronger connections and interactions with politics than in Western Europe. The reason for this could be found in the fact that throughout history church was the last resort of cultural freedom for the Balkan nations in long periods of political subjection. Namely, for the Balkan nations churches used to be guarantors of their ethnic and cultural identity through centuries. Perhaps the best illustration of this old 'hug' is the fact that the Balkan nations under Ottoman rule consisted of *millet*s, which represented both the community of religion and the community of peoples. In essence, they did not have a special territory, and they were determined only by belonging to religion. In the Balkans,

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<sup>40</sup> Timothy McCulloh, Richard Johnson, (2016), *Hybrid Warfare*, Tampa, JSOU.

<sup>41</sup> Miroslav Mitrović, (2017). "Hybrid Security Treats and Contemporary Approach to National Security", *Thematic Conference Proceedings of International Significance*, International Conference "Archibald Reiss Days", The Academy of Criminal and Political Studies, Belgrade, Vol. 1, p. 325-334.

<sup>42</sup> Miroslav Mitrović, "Hibridno ratovanje i asimetrične bezbednosne pretnje", Beograd, Vojno delo, 5/2017.



nations have lived together with each other. This uncertain situation has resulted in the fact that the intellectual elites of the Balkan nations have developed vision and aspirations, which are added the as much as possible areas in which lived members of the former *millet*s. On the basis of this, the European powers used the knowledge about confronted ambitions and ethno-nationalist aspirations of local elites to meet their own needs and interests. Therefore, peace in the Balkans was possible only if some imperial force played the role of arbitrator between corrupt ethnics and religions, and thus established the semblance of an intercultural, inter-ethnic and inter-confessional order. After the Second World War, the communist ideology with a pronounced vocation of de-ethnonational and de-religious, was the rival community of religions, ethnicities and languages forced to such balance. The civil wars during the 1990s just reminded that they had not yet managed to move the still strong relapse of the territorial militia with quasi-state autonomy to the western system of national states with solid territorial boundaries. The specific nationalism of the Balkan societies is basically ethno-nationalism, which is in a clear connection with the verse-funded extremism. In this way, the Balkans is colored with continuously strengthened extremist forces widely through the region. In general, religious identification has become less important than ethnicity because religious rivalry has been added to ethnic and ethno-national antagonisms.

In the context of understanding this phenomenon, it is very important to point out the ambivalent, and also the intensifying attitude of the political foundations of the so-called 'western' democracies. Namely, Western Europeans are inclined to observe the events in the Balkans, such as the Caucasus, as relics of anachronistic times and products of uncivilized variance. Europe, with its well-established forms of democratic values, should not be foreign to what is happening in the Balkans. „Problems induced in the so-called the weak states are incredible ease overwhelming to the region, and more and more thousands of miles of distant states considered to be countries of developed democracy“.<sup>43</sup> Only intertwining of ethnic, religious, cultural and linguistic elements make the Balkans a paradigm, in which intra-European conflicts in language, ethnicity, religion, etc., meet and clash with each other in a pronounced and distorted form. In conclusion, religion and ethno-nationalism elaborated as hybrid phenomena at the core of potential extremism have significant potential for security and stability in general, especially in regions with complex history such as the Balkan one certainly is.

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<sup>43</sup> Милош Миленковић, Милован Суботић, „Насилни недржавни актери и позиција Србије“, *Српска политичка мисао*, Институт за политичке студије, 3/2017. (55-70), p. 57.

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# GENESIS OF PROPAGANDA AS A STRATEGIC MEANS OF HYBRID WARFARE CONCEPT\*

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We bear witness to the impact that information has on decision-making process, political practice, international relations, as well as the widest public opinion. Manipulation of information and systematic intrusion of social engineering drivers indicate the wide large-scale repercussions in different parts of world, changing the face and dynamics of international relations, governmental structure, political and ethnic contexts, economic and ownership relations. Regarding the analyses of previous academic and scholar literature, those effects could be marked as consequences of implementation of the Hybrid Warfare concept implemented through psychological operations and communication strategies. Content analyses and induction-deduction work intend to provide a baseline for frameanalyses of mass communication usage for achieving the Hybrid Warfare concept aims.

*Key Words: propaganda, mass communication, public relations, hybrid warfare*

## Introduction

The 20<sup>th</sup> century was the age of globalization, technology and communications development, and also the stage of the greatest destruction in previous human history. The First and Second World War, development of the most devastating weapons, ideological, racial and religious clashes, numerous regional highly violent conflicts with millions of victims, food, water and energy caused crises, civil unrest, revolutions, valiance and peaceful or 'colored' changes of regimes, colored global human society as an unsafe and fragile place. The beginning of the 21<sup>st</sup> century started with more savage influence of interests, and more profiled in the sense of usage of power. Namely, one can notice in international relations, security and defense sphere the avoidance of the destructive and violence – based approach, and more nonviolence, with minimum and selective usage of military power. Moreover, communications management, propaganda, mass media shaping of public opinion and social engineering became more devastating lethal weapons than tanks or rockets. We could agree with the visionary thoughts of Lind

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that „Psychological operations may become a dominant operational and strategic weapon in the forms of media / information intervention ... [and] the main target will be enemy population's support of its government and the war. Television news may become a more powerful operational weapon than armored divisions“.<sup>1</sup> Lind basically announced, by this very concrete vision, the concept which, in our present days, we recognize as hybrid concept of conflict. At the dawn of the new century, globalization could be recognized as the main subject for understanding the relationships on the international scene in time after the Cold War, as well as conditional influence driver for contemporary security challenges.<sup>2</sup> Furthermore, geopolitical environment influenced by globalization became filled with collision of ambitions and interests of out-of-state power centers. Those power groups intend to achieve their interests through soft and hard power instruments of state, international or non-governmental organizations, which potentially lead to conflicts. General characteristics of contemporary conflicts are low intensity and non-specific forms of exposure. In academic and analytical comments, current security threats and risks are frequently termed as hybrid security threats.

## Hybrid security threats and strategic communication

In scope of the influence of globalization on contemporary world security arena, some authors<sup>3</sup> think that the last decade of the twentieth century was committed to a new era of warfare with no limit in terms of assets (armed or unarmed), composition of the deployed forces (national, transnational, multinational, non-governmental), as well as the sphere of attacks (territory, waters, resources, trade, finance, information, media, beliefs, culture, technology, the military, political system). Also, according to some theories,<sup>4</sup> activities that lead to the destabilization of a country or the change of its government with the aim of establishing the state in order to disturb the balance in international relations and execution of its own interests, predominantly by non-combat means, can be termed as *hybrid*.

*Hybrid security threats* include all phenomena, which engage synergistic implementation of conventional weapons, unconventional and irregular tactics, terrorist acts and criminal activities, simultaneously acting on one battlefield with the goal of achieving political objectives.<sup>5</sup> This concept of achieving national interests is called the unconventional, political (hybrid) warfare.<sup>6</sup> Hybrid security threats are generated to establish the conditions, which disrupt the balance of power in international relations and execution of

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<sup>1</sup> Lind, W., Nightengale, K., Schmitt, J., Sutton, J., Wilson, G., (1989). „The Changing Face of War: Into the Fourth Generation“, *Marine Corps Gazette*, Oct. 1989, pp. 26.

<sup>2</sup> Mitrović, M., (2017). „Influence of Global Security Environment on Collective Security and Defense Science“, *Temе*, Vol. *XL*, No 3-4 (in print).

<sup>3</sup> Qiao, L., Xiangsui, W., (1999). *Unrestricted Warfare*. PLA Literature and Arts Publishing House, Beijing.

<sup>4</sup> Kofman, M., Rojansky, M. (2015). „A Closer look at Russia's „Hybrid War““. Woodrow Wilson International Center for Scholars, Kennan Cable No. 7, April 2015, pp. 5

<sup>5</sup> Hofman., F.,G., (2007). *Conflict in the 21st Century-The Rise of Hybrid Wars*. Potomac Institute for Policy Studies.

<sup>6</sup> Hoffman., F., G., (2016). *On Not-So-New Warfare: Political Warfare vs. Hybrid Threats*. Retrieved from <http://warontherocks.com/2014/07/on-not-so-new-warfare-political-warfare-vs-hybridthreats/>; 12/05/2017.

its own interests, predominantly by non-combat means.<sup>7</sup> Concepts of non-military usage of national capacities for the purpose of achieving strategic domination are recognized in the US,<sup>8</sup> as well as Russian<sup>9</sup> military doctrinal documents.

Taking into account the characteristics and manifestation of hybrid forms of endangering national security in summary, they could represent the main pillars of hybrid operations expressions:<sup>10</sup>

- Special and psychological operations, which represent the armed, conventional-unconventional forms of the engagement of forces and resources.

- Economic, energy and political pressures. Besides the fact that the economy has intensified as a reflection of the state power, not explicitly the armed forces, it becomes the key subject of military operations planning with the overall military strategy relying on the engagement of various economic instruments, while the classic engagement of the armed forces is projected only when it is absolutely necessary.<sup>11</sup>

- Information campaigns – media and the Internet (ab)use. The essential aim of this pillars is to make an impact on retained public opinion, attitude deviation, changing the existence or adoption of new attitudes, as well as the introduction of doubt, uncertainty and fear. Campaigns are being carried out by the usage of all propaganda instruments, launching half-truths, unchecked sensations, media manipulation, cyberspace attacks, etc. The strong performances of creating public opinion significantly contribute to resultant effects of foreign policy, which aims to achieve the strategic dominance in a particular region.<sup>12</sup>

- Public diplomacy is an activity of low intensity, long-term oriented, directly related to the concept of soft power, based on intangible and indirect influences such as culture, social values and ideology.<sup>13</sup> Also, it is the instrument of communication between professional services, such as diplomats and foreign correspondents, and it is the process of intercultural communication.<sup>14</sup> Public diplomacy is an activity, which deals with the influence of the foreign public attitude in order to formulate and carry out foreign policy applications including international relations beyond traditional diplomacy.<sup>15</sup>

All listed activities have the purpose to destabilize a country or to change political governance in it. They are organized and carried out in order to achieve the strategic interests of outer power centers. The purpose is to establish the condition of balance disruption in international relations, and carry out their own interests, mostly by non-

<sup>7</sup> Kofman, M., Rojansky, M., (2015), pp. 3.

<sup>8</sup> Department of the Army (2008). *Field Manual No. 3-0: Operations*. Washington, DC.

<sup>9</sup> Президент России, Москва, (2014). *Военная доктрина Российской Федерации*. Retrieved from, [http://www.consultant.ru/document/cons\\_doc\\_LAW\\_172989/](http://www.consultant.ru/document/cons_doc_LAW_172989/).

<sup>10</sup> Mitrović, M. (2017). „The economic and energy aspects of a hybrid threat to national security“. *Vojno delo*, Belgrade, 6/2017.

<sup>11</sup> Taillard, M. (2012). *Economics and modern warfare*. Palgrave MacMillan.

<sup>12</sup> Mitrović, M., (2017). „The potential influence of interest groups on the US Foreign Policy – Case of 'Kosovo'“. *Zbornik Matice srpske za društvene nauke*, No.163 – 164 (in print).

<sup>13</sup> Nye, J., (1990). „The misleading metaphor of decline“. *The Atlantic Monthly*, March 1990.

<sup>14</sup> Cull, N. (2006). *Public Diplomacy Before Gullion: The Evolution of a Phrase*. Retrieved from <https://uscpublicdiplomacy.org/blog/public-diplomacy-gullion-evolution-phrase>.

<sup>15</sup> Mitrović, M., (2017). „Public Diplomacy in Hybrid Warfare paradigm“, *Vojno delo*, Belgrade, 7/2017.

combat means.<sup>16</sup> On the basis of these theories, it could be concluded that hybrid warfare does not represent warfare *per se*, but a form of a conflict concept in which a wide range of military and non-conventional activities are applied with the purpose to achieve the strategic advantages for applying the entity.<sup>17</sup>

*Strategic communication* represents modern management concept of constant adaptation of interactive communication between different levels and forms of organization of human society for the purpose of achieving the desired relationship and establishing relations between subjects of the process.<sup>18</sup>

Communication is not the activity with purpose by itself. On the contrary, it has been created with the aim to establish certain relations between subjects of the communication process. From this point, communication has to be planned, controlled, corrected and directed, and its goals have to be defined, as well as resources. This type of approach leads to the conclusion that organized communication is a strategic and planned process, whose products are newly built relations among subjects. The established new relations are in accordance with wider strategy goals, as well as many other different changeable factors that influence the communication process. Strategic communication is an interactive relation between exchange and harmonization of messages between subjects that are in the process. Therefore, it is necessary to emphasize the dual character of the communication (sending and receiving messages) process, in which the subject with inventive and innovative approach has the dominant role. In strategic communication planning it is necessary to adopt and implement systematic approach, which consists of:

- Analysis of factors of the communication environment, objective, subjective strengths and weaknesses;
- Strategic planning of the communication process;
- Definition, choice and plan of relative communication strategy.
- Implementation of strategy;
- Evaluation of the results of the application of individual phases of communication strategy, revision and completion;

The planning process of communication strategy contains the following customized key-process elements: 1) Definition of goals; 2) Development of strategy at the level of organization; 3) Selection of the communication strategy adjusted to certain target group/groups; 4) Development and implementation of communication tactics, instruments and tools; 5) Periodical evaluation with estimation of effects and planned elements for correction; In order to have the appropriate process of strategy development, meaningful phases involve the following steps:

- Analysis and understanding of the communication environment, contemporary positions, attitude, cultural, ethic and other values of target groups;

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<sup>16</sup> Mitrović, M., (2017). *Critical National Infrastructure in the scope of Asymmetric Security Threats involved in Hybrid Warfare concept*. In Stojanović, S.,(Eds.) *Strategy and Assiemtry*, Belgrade: Staretgic Researche Institut& MC "Odbrana".

<sup>17</sup> Vračar, M., (2017). „Theoretical-epistemological approach in the study of the ‘Hybrid Warfare’”, *Vojno delo*, Beograd, 7/2017 (in print).

<sup>18</sup> Mitrovic, M., „Lobbying - Managing with Strategy Orientated Communication”(March 28, 2017). Available at SSRN: <https://ssrn.com/abstract=2942002> or <http://dx.doi.org/10.2139/ssrn.2942002>.

- Estimation of communication that includes mutual harmonization of wider circle (long-term strategy, common values, future business, political and other goals) with precise communication strategy;
- Estimation of all resources for implementation of the strategy, and their spatial and time accessibility. Analysis of potential crisis moments with availability of resources (administrative procedures, absence, time lags of available resources, multiple engagement, etc.);
- Selection of adequate tactic(s) for implementation of strategic communication, which means creation of adjusted instruments and tools for communication;
- Time adjusting tactics, determination of control, corrective points and actions, planning crisis scenario for every phase of strategy implementation and possible adjustment. Taking into account all of the abovementioned things, we could conclude that strategic communication is a planned, comprehensive activity of organizational entities, whose goal is to achieve successful and efficient interaction with the environment.<sup>19</sup> The conclusion is that strategic communication is a part of the wider organizational strategy. Having in mind the framework of the hybrid warfare concept in which an organization strives to achieve geopolitical, security, economic, political or other objective, we can conclude that communication that is performed by special and psychological operations, media and Internet manipulation, as well as support to economy and public diplomacy has significant contribution for an organization. The most important communication model, which is indicated as powerful hybrid warfare concept, is propaganda. However, what is really propaganda (and what it is not), where are its roots, and how is it implemented in the hybrid warfare concept?

## Propaganda – brief history and roots of modern approach

Maybe the most conceptualized retrospective of propaganda development from the ancient times to the beginning of the 20<sup>th</sup> century was provided by the “father of spin”<sup>20</sup> Edward L. Bernays in the preface to the new edition of his work *Crystallizing Public Opinion*.<sup>21</sup> Namely, Bernays lines up the direct link from Babylon monuments, Solon improved voting rules, Greek oratory and philosophy schools till Roman „*Rumores, vox populi, res publicae*“ as the first systematically developed communication strategies. According to him, the purpose of this communication was to establish the support of the wide public for the ruling class and understanding the necessity of the support of social and civilization values. However, the most significant development from promotion and spread of messages was achieved by the Catholic Church. Namely, the first organized and direct attempt to not just inform and animate, but to influence the mind of non-members and attract them to participate in a (religious) idea was recorded in the first half of the 17<sup>th</sup> century. In fact, in 1622 Pope Gregory XV wrote the document entitled “*Sacrae Congregatio De Propaganda Fide*” for the purpose of organizational and doctrinal missionary work abroad. The institutional approach was developed with further establishment of the College of Propaganda in Rome

<sup>19</sup> Mitrović, M., (2017). *Strategic Lobbying*. LAP LAMBERT Academic Publishing.

<sup>20</sup> Tye, L., (1998). *Father of spin-Edward L. Bernays and the birth of public relations*. New York: Crown Publishers.

<sup>21</sup> Bernays, E., (1961). *Crystallizing Public Opinion*. New York: Liveright Publishing Corporation p. iii-lvi.

in 1627 by Pope Urban VIII for the education of the missionary priests. Hence, in later years the word *propaganda* came to be applied by any institution or scheme for propagating a doctrine or system.<sup>22</sup> In the middle of the 19<sup>th</sup> century, the term was shaped in present day connotation meaning the „term of reproach to secret associations from the spread of opinion and principles, which are viewed by most governments with horror and aversion“.<sup>23</sup> In further scholar discussions, propaganda was also recognized as an organizational attempt „to spread of religious political or revolutionary principals“.<sup>24</sup>

Propaganda has existed since the dawn of civilization and it has its own history of successes and falls. However, some authors define propaganda as the significantly powerful force since the French Revolution, deeply connected with Robespierre's widely promoted and disseminated contentions that the revolutionary France had the mission to bring the world liberation.<sup>25</sup>

However, we could agree with Harold D. Lasswell that the popular discovery of propaganda was made during the First World War, and that our time is „the Age of Propaganda“.<sup>26</sup>

Some definitions recognize propaganda as:

– „Propaganda is spreading of ideas or attitudes that influence opinions or behavior or bout“.<sup>27</sup>

– „Propaganda is a systematic attempt by an interested individual (or individuals) to control the attitudes of groups of individuals through the use of suggestion and, consequently, to control their actions“.<sup>28</sup>

– „Propaganda is an instrument of total policy, together with diplomacy, economic arrangements and armed forces. Political propaganda is the management of mass communications for power purposes with the aim of economization of material costs of world dominance“.<sup>29</sup>

In order to understand propaganda, a useful standpoint could be the suggestion by Willcox that „Mass society, mass media and shifts in technology each contribute to the structure of modern propaganda and the changes must be seen as part of an ongoing process. In this respect, any definition of propaganda must be equally fluid to apply despite changes in society, unless, that is, one draws distinctions between different forms of propaganda dependent upon the chronological timeframe“.<sup>30</sup> However, as general as possible, it could be said that propaganda is a systematic attempt through mass communication to influence the thinking and thereby the behavior of people in the interest of some in-group.<sup>31</sup>

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<sup>22</sup> Smith, P., (1969). *International propaganda*. University of Minnesota.

<sup>23</sup> Brande, T., (1842). *Dictionary of Science, Literature and Art*. Cited in Smith, P., (1969). *International propaganda*. University of Minnesota, p. 5.

<sup>24</sup> Flügel, G., (1847). *Vollständiges English-Deutsches und Deutsch- English Wörterbuch*, Vol.1 Leipzig, 1847. Cited in Smith, P., (1969). *International propaganda*. University of Minnesota, p. 6.

<sup>25</sup> Smith, P., (1969). *International propaganda*. University of Minnesota, p.10.

<sup>26</sup> Harold D. Lasswell, and Blumenstock, D., (2006). *World revolutionary propaganda*, San Francisco: Prelinger library, p. 23.

<sup>27</sup> Powel, J., (1951). *Anatomy of Public Opinion*. New York, p.7

<sup>28</sup> Doob, L., (1935). *Propaganda: its Psychology and Technique*, New York, p.75.

<sup>29</sup> Lasswell, H., (1951). *The Strategy of Soviet Propaganda*. In Daniel Lerner (Ed.), *Propaganda in War and Crisis*. New York, p.27.

<sup>30</sup> Willcox, D., (2005). *Propaganda, the press and conflict: the Gulf War and Kosovo*. Routledge, p. 12.

<sup>31</sup> Smith, P., (1969). *International propaganda*. University of Minnesota, p.12.



For sure, propaganda is a very complex and multidisciplinary form of acting, which is in connotation with sociology, psychology, social psychology, political science, and it is very hard to get one overall definition. However, the common understanding of propaganda indicates that it is the art of influencing, manipulating, controlling, promoting, changing, inducing, securing the acceptance of opinions, attitudes, actions or behavior.

## Roots of contemporary propaganda genesis

The complex nature of propaganda was recognized by scholars since the beginning of the 20<sup>th</sup> century. It was analyzed from socio-psychological, political-psychological, cognitive aspect, behavior, heritage and biological point of view.

One of the most significant and influential approach to understanding the genesis of mass reaction indicated by propaganda were theories of stereotypes and prejudice as generators of solid based public opinion, which are adequate for manipulation of groups ("crowds") of people.

### Stereotypes

Walter Lippmann was recognized as the father of understanding and developing the structure of stereotypes<sup>32</sup> as one of the main drivers for propaganda. In his work *Public Opinion* Lippmann explains that Freud's study of dreams had helped him formulate his idea of the „pseudo-environment“, although by 1922 he had gone beyond the Freudian individual psychology.<sup>33</sup> Namely, according to Lippmann, the real external environment is too big and complex for direct acquaintance by citizens, which indicates that the public can never fully understand the reality. According to Lippmann, people take as facts not what is, but what they perceive to be facts, a counterfeit of the reality or the „pseudo-environment“. Distorted picture arises not only from emotional factors and ego needs, but also from stereotypes, the image we have of people and things. Namely, we do not see and define. On the contrary, we define first and then see. It is symbolic interactionism, where people act towards objects on the basis of managing what the objectives have for them. These meanings, which are products of social interaction, are modified through interruption by individuals. According to Lippmann, the pseudo-environment determines a great deal of political behavior.<sup>34</sup>

Cooley's theory of „looking-glass self“, by which the sense of personal identity arises from interrelation with others, had strong influence on Lippmann's concept.<sup>35</sup> Also,

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<sup>32</sup> Stereotypes are used as synonym for actions of a printer by which some image of reality is pasted to audience by influence on each individual. See more in Lippmann, W., (1993). *Phantom public*. Transaction Publishers.

<sup>33</sup> Curtis, M., (1998). *Introduction*. In Lippmann, W., *Public Opinion*. New Jersey: Rutgers-The State University New Brunswick, pp. XV.

<sup>34</sup> *Ibid*, p. XVI.

<sup>35</sup> Cooley thinks that one cannot understand oneself without reference to one's interpretation of how others see us. He thinks that heritage and social environment influence human behavior and that human nature, in this sense, is subjected to change. According to him, human nature, in any such sense as this, is in the highest degree changeful because the behavior to which it gives rise varies, morally and in every other way with the influences that act upon it. See more in Cooley, C., (1922). *Human Nature and the Social Order*. Charles Scribner's Sons.

Meed's<sup>36</sup> theory of self-concept by which sense of one is a reflection of what an individual believes others think of him<sup>37</sup> had great influence on Lippmann's model.

Basically, Lippmann corresponds to the basis of modern social and psychological thoughts from the scientific and cultural environment of his age including the first two-three decades of the 20<sup>th</sup> century. According to him, the pseudo environment is representation of the world, which could be true, false or the mixture of two. The response of people depends on cognitive factors and mental construction. Stereotypes used to be certain fixed habits of cognition. Lippmann introduced a strong distinction between „truth“, which is not the import for press (media) and „news“, which is. Namely, the purpose of news is to signal an event; the function of truth is to bring the hidden facts to light, to let them into relation with each other, and to make a picture of the reality on which people can act. Furthermore, Lippmann thinks that news depends on stereotypes, standardization, routine judgment and a disregard for subtlety. Also, he thinks that the pattern of stereotypes at the center of our codes largely determines which group of facts we shall see, and in what light we shall see them. The pseudo environment resulted from censorship, our urge to simplify the complex, and the fear to face facts, which undermines cherished beliefs. He puts under critical consideration the perception of traditional democracy theory and the way in which power is exercised. Namely, the democratic theory assumed citizens could make rational decisions on public issues once they were aware of the facts. According to Lippmann, in the globalized world, knowledge does not need spontaneous management, but rather organized and goal-oriented one. A distortion of the facts is present in the mind of citizens, and each person creates a reality that is felt to be appropriate. Stereotypes, which are used and guarantee our self-respect, the projection of the world of our own sense of our own value and our actions, are a reflection of our projections corresponding to actual facts. Furthermore, in *Phantom public*<sup>38</sup> published in 1925 Lippmann involves criticism of the system of democracy, recognizing the public as being simply balloting machinery, without possibility to understand all complexity of the globalized world. According to him, by balloting the public chooses who will be delegated to interpret and understand the world for them. According to him, democracy supports citizens to ballot the elite, which recognizes national interests and reproduces „real true“ in favor of supporting stereotypes.<sup>39</sup>

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<sup>36</sup> Mead, G., (2011). *A Reader*, (Ed.) Carreira da Silva, F., Routledge.

<sup>37</sup> Mead argues that human nature is endowed with and organized by social instincts and impulses, that the consciousness of meaning has arisen through social intercommunication and finally that the ego, the self, that is implied in every act, in every volition, with reference to which our primary judgments of valuation are made, must exist in the social consciousness within which the *socii*, the other selves, is the subject self. Mead follows McDougall's list of eleven human instincts (flight, repulsion, curiosity, pugnacity, subjection, self-display, the parental instinct, the instinct of reproduction, the gregarious instinct, the instinct of acquisition and the instinct of construction) and concludes that six of these are social (pugnacity, subjection, self-display, the parental instinct, the instinct of reproduction and the gregarious instinct) and that such group of instincts inevitably provides the content and the form of a group of social objects. The second implication has to do with the theory of imitation, by which, social instincts imply that certain attitudes and movements of one form are stimuli to other forms to certain types of response. See more in Mead, G., (2011). *A Reader*, (Ed.) Carreira da Silva, F., Routledge, p.14-20.

<sup>38</sup> Lippmann, W., (1993). *Phantom public*. Transaction Publishers.

<sup>39</sup> According to Lippman, ordinary citizens live in the world which they cannot see, do not understand and cannot direct. For that reason, the public needs the elite, decision makers which would be free of trampling and the roar of the bewildered herd. At the core is manipulation and creation of contexts by which the public, incapable of recognizing a wide picture, will be lead. See more in Lippmann, W., (1993). *Phantom public*. Transaction Publishers.

Stereotypes as basic conceptual approach for propaganda setting, following Lippmann's theory, could be recognized as images, categorization or generalization, which emphasizes or exaggerates traits, characteristics or behavior patterns that have been assigned to individuals or groups with a regulatory degree. Individuals in a group would normally be expected to possess the particular characteristics assigned to a group. The traits may refer to the physiological or biological phenomena, or to members of national, ethnic, political, ideological or religious groups. Stereotypes have certain aspects:<sup>40</sup>

– *Sociological* aspect asserts that stereotypes are present in our culture and that we absorb them through the same process of socialization (family, groups, mass media and interaction with others) as we do other concepts or behavior patterns. Of course, stereotypes depend on cultural tradition, group interest and differentiation of the group by outsiders.

– *Psychological* orientation stems from the assumption that stereotypes reflect inner driver, prejudices, or frustrations, and most of it is based on the Freudian literature on the desires of human beings.

– The *Cognitive* approach depends on social reality and context in which we live. The role of the observer is always selective and usually creative because we all have an image of the world we have built. People have only limited capabilities to absorb and process information, so that delegated or elected authorities will choose what is important for feeding the „pictures in our heads“.

The core of the stereotypes concept is that people perceive environment and act on the basis of the perception rather than real environment, and in this process stereotypes are a crucial and functional element. Through categorization and generalization we reduce the complexity and uniqueness of human affairs and relationships to simplicity. In this way, one can get stability and give meaning and predictability. The observer becomes convicted of the validity or perception of a group. One's mental images, perception, beliefs and expectations about a particular individual or group dominate one's outlook on them. In this cognitive process stereotypes may coincide with prejudice in its election accentuation, and interpretation of information about groups. Also, in the cognitive process we have not only re-judgments about things, but also self-fulfilling assertions. We are led to see what we expect to find because of our selective choice of information. We choose to acknowledge information that corresponds with our expectations, and ignore information that does not. The behavior of a group confirms the stereotype we have constructed.<sup>41</sup> The overall conclusion is that Lippmann loved the necessity of manipulation without deep analytical approach to the negative consequences of implementation of the stereotypes concept.<sup>42</sup> In short, stereotypes contribute to economization of opinions by simplifying the process of information selection, which is led by the elected

<sup>40</sup> McClay, W., (1993). *Introduction*. In Lippmann, W., (1993). *Phantom public*. Transaction Publishers, p. xxi-xxv.

<sup>41</sup> *Ibid*, p. xxvii.

<sup>42</sup> Lippmann coined "a myth is not necessarily false...if it has affected human conduct a long time, it is almost certain to conation much that is profoundly and importantly true". Furthermore, one of the problems in assessment of stereotypes is centrality of the supposed characteristics - ambitious, aggressive, thrifty, and so on-of a group to the other aspects of its behavior. The other problems are the validity of the characteristics themselves in cooperation with the behavior patterns of members of a group, and the degree to which a stereotype is accepted. The future problem arises in the case of the last factor, when some members of a stereotyped group accept the dominant image of themselves and even reinforce it. This has been termed "the mirror-image" attitude. See more in Lippmann, W., (1993). *Phantom public*. Transaction Publishers, p. xxx-xxvi.

elite.<sup>43</sup> The second conclusion introduces stereotypes as self-defense base of their own identity, which is elementary as motivation for the public inner support for action. The elected elite could easily amplify public support for action by self-defense core stereotypes, constricted on the basis of „us against them“ comparison, where „we“ is always a positive identity, and „them“ is negative and evil one.<sup>44</sup>

## Prejudice

Another milestone, which contains the core of propaganda concept together with stereotypes, is prejudice. Conceptualization of prejudice as the driver for influence on generic public attitudes is Gordon W. Allport with his study *The nature of Prejudice*.<sup>45</sup> Allport is the founder of the cognitive approach to prejudice, which views stereotyping and categorization as normal and inevitable by-products of how people think. Yet, he also viewed prejudice as a fundamentally irrational hatred born of ignorance and the ego-defensive maneuvers of people with weak personality structures. Allport's emphasis on antipathy directed the field towards the types of prejudice that produce exclusion and violence. However, it distracted the field from other types of bias involving more subtle types of control and exploitation (e.g. affectionate paternalism). Basically, Allport defines prejudice as „an antipathy based upon a faulty and inflexible generalization“,<sup>46</sup> and the most of critically based scholars recognize this approach as the main limitation point of view of prejudice as antipathy.<sup>47</sup> Moreover, besides „antipathy“, some authors recognize „faulty generalization“ as the problem in Allport's theory, as well as the possibility of positive prejudice, whose existence depends fundamentally on flexible social context and slowly yields to changes in groups' positioning in the social structure.<sup>48</sup>

Allport also insists on categorization, and according to him „The human mind must think with the aid of categories. . . . Categories are the basis for normal prejudgment“. <sup>49</sup> We cannot possibly avoid this process for at least five reasons:<sup>50</sup>

– *Categories enable people to function in the world.* People cannot possibly treat every person (or object) as unique, and must understand them in terms of prior experiences.

<sup>43</sup> Stereotypes may change in the long run or in accordance with changes in the political climate. Stereotypes in broad sense could serve to an individual (cognitive structuring of the sense of the world) or a group and provide a guide to behavior and conduct towards those individuals and groups. They provide a facile explanation for complex political and social events and they are used as a mechanism for justification of actions and differentiation among groups and people. See more: Ibid.

<sup>44</sup> Negative images and attributes of inferior status of some group lead to negative stereotypes creation, which contributes to possible valiance, justification for war, aggression, colonization and civilizing mission or democratization. The emphasis on one's own positive attributes, and stressing the negative information about others, contributes to the collective sentiments that help bind a group together and provide for continuity and solidarity. Ethnocentrism, ideological racism, as well as other „isms“ could be stereotypes, which exaggerate animosity, potential hostile and enemy approach. See more: Ibid.

<sup>45</sup> Allport, G. W. (1954/1979). *The nature of prejudice*. Cambridge, MA: Perseus Books.

<sup>46</sup> Allport, G. W. (1954/1979). *The nature of prejudice*. Cambridge, MA: Perseus Books, p. 9.

<sup>47</sup> Dovidio, J., Glick, P., and Rudman, L., (2005). *Reflecting on of Prejudice: Fifty Years after Allport*. In (Ed. Dovidio, J., Glick, P., and Rudman, L.,). *On the Nature of Prejudice*. Blackwell Publishing.

<sup>48</sup> Eagly, A. and Diekmann, A., (2005). *What is the Problem? Prejudice as an Attitude-in-Context*. In (Ed. Dovidio, J., Glick, P., and Rudman, L.,). *On the Nature of Prejudice*. Blackwell Publishing, p. 19-35.

<sup>49</sup> Allport, G. W. (1954/1979). *The nature of prejudice*. Cambridge, MA: Perseus Books, p. 20.

<sup>50</sup> Ibid, p. 21.

– *Efficient and effective* approach insists that categories gather as much as they feasibly can in their cluster. Gross categories are more pragmatic for many purposes than fine-grained categories. The least effort is the most efficient as long as it can guide interaction with the environment.

– *Categories aid identification*. When one classifies objects or other people one knows what they are. The category links relevant associations and concepts allowing prejudgment. For social groups stereotypes guide perception and interaction with people facilitating speedy adjustments.

– *Categories provide affective tags* with recognizable, simplified and understandable flavor to all their contents with unique ideational and emotional savor, linking it to emotional prejudices.

– *Categorization processes reflect significant irrationality*, which is easy to be formed, modified, consisting of intense emotions, resistant to evidence, admitting and ignoring exceptions.

Basically, with categorization and prejudice Allport contributes to the approach of „economization“ of time, which a person, a member of a group necessarily needs to understand and classify the other group.

## Organization and management of groups

In order to persuade and introduce stereotypes and/or prejudice as drivers for managing public relations process, preconditions are to organize individuals in generic groups with common characters, values, identities, attitudes, etc. In that sense, a group or according to Le Bon „Crowd“ is characterized by „The disappearance of conscious personality and the turning of feelings and thoughts in a definite direction, which are the primary characteristics of a crowd about to become organized, do not always involve the simultaneous presence of a number of individuals on one spot“.<sup>51</sup> Le Bon argues about *psychological law of the mental unity of crowd*, which literally indicates the existence of a psychological crowd, that once constituted, it acquires certain provisional and determinable general characteristics. It means that the crowd's collective mind, once formed, is doubtless transitory, and it represents very clearly defined characteristics of a psychological crowd. Thus, it forms a single being, and it is subjected to the *law of the mental unity of crowds*.<sup>52</sup>

Furthermore, Le Bon thinks that the most striking peculiarity presented by a psychological crowd is the following: 1) Transformation of an individual in the collective mind; 2) Action of the collective mind is different than single one; 3) Crowd stimulates ideas and feelings for self-extraction.<sup>53</sup> Le Bon supports his conclusions by theories of heritage (germ plasm, race) and social development (religion, traditions, time, political and social institutions, instruction and education). General characteristics of crowds are:<sup>54</sup>

– *Impulsiveness, mobility, and irritability of crowds*. The crowd depends on all exterior exciting causes, and it reflects their incessant variations. The impulses, which the crowd obeys, are strongly domineering in order to overwhelm the feeling of personal interest. Premeditation

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<sup>51</sup> Le Bon, G., (2002). *The Crowd*. New York: Dover publications, p. 2.

<sup>52</sup> Ibid, p. 3.

<sup>53</sup> Ibid, p. 4.

<sup>54</sup> Ibid, p. 10-42.

is absent from crowds, but there is racial influence. *Crowds are credulous and readily influenced by suggestion.* Dominant obedience of crowds to suggestions is related to the fact that images, which are evoked in the mind of crowds, are accepted as undoubted realities. Education of individuals in a crowd does not have an impact on the sense of influence of illusions, by which a crowd could equally consist of the educated and ignorant men.

– *The exaggeration and ingenuousness of the sentiments of crowds.* Crowds do not admit doubt or uncertainty, and they always go to excesses. Their sentiments are always extreme.

– *The intolerance, dictatorialness, and conservatism of crowds.* A crowd is intolerant of any sign of differences, and it generates its unity on the uniqueness. The momentary revolutionary instincts of crowds do not prevent them from being extremely conservative because crowds are instinctively hostile to changes and progress.

– *The morality of crowds.* The morality of crowds, according to the suggestions under which they act, may be much lower or much higher than that of the individuals composing them and it could be remarked among the special characteristics of crowds. Acting characteristics of a crowd are impulsiveness, irritability, incapacity to reason, absence of judgment and the critical spirit, exaggeration of sentiments, etc.<sup>55</sup>

The factors, which determine these opinions and beliefs, are of two kinds:

– *Remote factors* are those which render crowds capable of adopting certain convictions and absolutely refractory to the acceptance of others. These factors prepare the ground in which certain new ideas are suddenly seen to germinate, whose force and consequences are the cause of astonishment, though they are only spontaneous in their appearance. The outburst and putting certain ideas in practice among crowds present at times startling suddenness. This is only a superficial effect, behind which a preliminary and preparatory action of long duration must be sought. Remote factors are: 1) Race; 2) Traditions; 3) Time; 4) Political and Social Institutions; 5) Instruction and Education.<sup>56</sup>

– *Immediate factors* are those which, coming on the top of this long, preparatory work, in whose absence they would remain without effect, serve as the source of active persuasion on crowds; in other words, they are the factors, which cause the idea to take shape and let loose with all its consequences. The resolutions by which collectivities are suddenly carried away arise out of these immediate factors; due to them a riot breaks out or a strike is decided upon, and enormous majorities invest a man with power to overthrow a government. Immediate factors are: 1) Images, words, and formulae; 2) Illusions; 3) Experience; 4) Reason.<sup>57</sup>

Consequently following Le Bon's theory of crowds, it is possible to introduce Huxley's debate about unconsciousness of individuals that in modern society, under the pressure of quantity, quality, morality and organization of society, people are pushed into crowds. Namely, in modern world „millions of abnormally normal people, living without fuss in a society to which, if they were fully human beings, they ought not to be adjusted, still cherish 'the illusion of individuality', but in fact they have been to a great extent deindividualized“.<sup>58</sup> According to Huxley, every society attends to standardize the human individual on purpose

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<sup>55</sup> Ibid.

<sup>56</sup> See more: Ibid, pp. 46-60.

<sup>57</sup> Ibid, p. 60-71.

<sup>58</sup> Huxley, A., (1958/2000). *Brave New World Revisited. (El. edition)*. New York: Rosetta Books, p. 20.

by using some dogmas. The main reasons for this are overpopulation and over-organization of modern world, which indicates the necessity for democratic institutions to work effectively. According to Huxley, modern institutions use propaganda to deliver the necessary efficiency, and in that process we could recognize „rational propaganda, in favor of action that is consonant with the enlightened self-interest of those who make it and those to whom it is addressed, and non-rational propaganda that is not consonant with anybody's enlightened self-interest, but is dictated by, and appeals to, passion“.<sup>59</sup>

When it comes to the actions of individuals, there are more exalted motives than enlightened self-interest. However, where a collective action has to be taken in the fields of politics and economics, enlightened self-interest is probably the highest of effective motives. Huxley argues that „Propaganda in favor of action dictated by the impulses that are below self-interest offers false, garbled or incomplete evidence, avoids logical argument and seeks to influence its victims by the mere repetition of catchwords, by the furious denunciation of foreign or domestic scapegoats, and by cunningly associating the lowest passions with the highest ideals, so that atrocities come to be perpetrated in the name of God and the most cynical kind of *Realpolitik* is treated as a matter of religious principle and patriotic duty“.<sup>60</sup> According to him, the main tools that support propaganda in modern world are media, which are under the control of the Power Elite in society. The constitution of the Power Elite depends on organization of society and ownership under media. A person in modern era makes direct contact with society and reality in two ways: as a member of some familial, professional or religious group, or as a member of a crowd. Therefore, shaping public opinion of the masses is led by several principles: value judgment, focusing, reaction by feelings and unconscious drives. Successful propaganda is virtuous in manipulating instincts and emotions, in the form of constantly repeated stereotyped formulas.<sup>61</sup>

For Huxley, people are more convicted to the irrational propaganda that makes it the most influential. According to him „[T]he principles underlying this kind of (irrational) propaganda are extremely simple. Find some common desire, some widespread unconscious fear or anxiety; think out some way to relate this wish or fear to the product you have to sell; then build a bridge of verbal or pictorial symbols over which your customer can pass from fact to compensatory dream, and from the dream to the illusion that your product, when purchased, will make the dream come true“.<sup>62</sup>

## Conclusion

On the basis of the abovementioned analyses, the conclusion could be affected in line with identifying the process of propaganda: the Existence of the Power Elite, which consumes the delegated and elected by people right to estimate priorities and image of the reality; the Power Elite aspires to efficiency, prioritization and economization of the masses by using the focus - based stereotypes and prejudice in forms of rational and

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<sup>59</sup> Ibid, p. 28.

<sup>60</sup> Ibid, p. 29.

<sup>61</sup> Ibid, p. 33-38.

<sup>62</sup> Ibid, p. 42.

irrational messages broadcasting; Messages could be addressed to any audience, group, nation, and they have purpose to achieve aims of the Power Elite. In the core of propaganda we have recognized stereotypes, prejudice and mass manipulation modeling. Considering stereotypes and theory of prejudice, one group, even the whole nation, could be directed to some other group or nation by active communication campaign provided by the elected elite, or interest groups, which are considered as the unique elite.

In context of the Hybrid Warfare concept, propaganda as previously considered, could be recognized as a part of all offered pillars: special and PSYOPS, economy and energy, media and Internet, and public diplomacy. For sure, in some pillars propaganda is the tool of acceleration and it supports the desired effects (special operations, economy, public diplomacy). However, in some of them it has its own agenda (PSYOPS, media, Internet). Furthermore, propaganda as an instrument of strategic communication for the purpose of achieving hybrid aims, is used in the preparation phase (creation of stereotypes and prejudice) and in the phase of action (motivation for action, readiness to fight, insensibility for „their“ victims, generalization of „our“ achievements as undoubted right, etc.).

Of course, propaganda is essential for dissemination and support of all activities and achievements in the sphere of recognized pillars of the hybrid warfare concept. Globalized contemporary security environment does not recognize absolutely safe country, which means that a threat to national security is „clear and present“ danger, especially in the hybrid warfare conceptual meaning. This indicates that every country has to adopt critical and rational approach to the existence of hybrid security threats. In favor of this, active propaganda activities should be recognized as a signal of interest and current presence of interest of some side to achieve hybrid strategy dominance and goals. As a possible answer to propaganda activities, some strategically planned activities could be performed:

– *Identification of sources*, by which it is possible to identify motives of a subject, who has performed an action.<sup>63</sup> Namely, identification of initiators and their motives could provide real ambitions and aims of hybrid operations and clarify environmental situation, as well as the position of other stakeholders.

– *Recognition of core values*, which are constituent factors of stereotypes and prejudice genesis upon which counterpart propaganda builds antagonism, regards our side in its and other exposed public. Also, it could provide understanding of motivation for an action and the level of negative implication for our side and the root of antagonistic image of „us and them“.

– *Identification of main communication channels*, by which it is possible to understand who is message for, is mostly dedicated, or which segment of public is most valuable for sender. Although the modern global media have almost the unlimited possibility to reach every person on the Earth, dedicated professional analyses could recognize the main segment of public, as well as the main message. This could provide recognition of weakness spot in campaign, „blind“ spots of uncovered public, as well as the open space for defense propaganda actions.

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<sup>63</sup> Nikolić, N., „Elaboration of novelty of the Hybrid Warfare concept“. *Vojno delo*, 5/2017.



– *Mobilizing interest - based coalition*, by which we could develop capabilities for counterpropaganda efforts. Coalition and allies should be based on interest, rationality and mutual aims. Otherwise, non-principal coalition, where one side has hidden agenda of their own actions, again places our side in a victimized position. Trust and honesty could be marked in propaganda reciprocity. In case of in-reciprocity, the consequences could be the loss of its own identity and becoming a sort of „trolling nation“.

– Development *and implementation of counterpropaganda strategy*, which means the development of strategic communication campaign and its implementation. In the strategy development all necessary postulates of strategic management should be involved, otherwise, the campaign will probably fail.

Finally, propaganda is not a new phenomenon. However, in contemporary environment it has acquired new power on the basis of previous theoretical concept and wide experience. For sure, propaganda, as well as the executed deception operations, has been the powerful tool of generals, intelligence agents and politicians throughout history. However, in contemporary security environment it has gained a large role and significant importance mainly due to highly technically advanced and globalized international political environment.

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# ECOLOGICAL SECURITY AND MILITARY ORGANIZATION IN THE DIGITAL AGE

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Preoccupation of the public with ecological problems escalated during the last decades of the 20<sup>th</sup> century, and it has incredibly increased during this century, as well. Ecological security is a certain contemporary phenomenon that is present in diverse organizational units. This field is full of uncertainty and risks. From the moment of realizing that ignorance of ecological threats violates personal and collective security to a considerable extent and causes long-term and often catastrophic consequences to the environment, the need for ecological enlightenment has been recognized in many modern systems. The military organizations, which are the most complex security structures, are not an exception.

This paper deals with security ecological risks in the military organizational systems and it emphasizes possibilities for effective action through constructive use of achievements of the modern digital age.

*Key Words: ecological security, military organizations, IT use*

## Introduction

Ecological threats in the contemporary world are getting more and more clear and direct. Due to digitization and improved availability of information, the awareness of their presence and consequences, which their negligence can have to the overall security, has overcome the level of expert and scientific circles. Nowadays, more than ever, one should strive for harmony with nature. Despite intensive research, ecological threats cannot be still used to precisely define spatial boundaries and conclude definitely when local threats become state ones, state threats become regional ones, regional threats become continental ones, and continental threats take a global level. Neither an individual nor the society, economic and non-governmental organizations, state and non-state actors is spared ecological security threats.

This work is based on the following premises: firstly, ecological security in the modern age is becoming rather important part of the overall security; secondly, there are close ties of activities of the military organizational systems with challenges, risks and threats in the field of ecology; thirdly, in the contemporary military organizational systems the work on effective and efficient conduct of ecological security can be significantly enhanced by using

achievements of the modern digital age. Thus structured, the paper is divided into three parts. The first one is focused on contemporary aspects of ecological security, the second one deals with concentration of the subject area to the specific (military) organization, and the third one highlights the possibility of the use of digitization in the elaborated field.

## Ecological security

### *Transformation of approach to security*

The term “security”, despite hardly measurable number of expert and scientific papers dealing with it that originate from the ancient times (the beginning of literacy), has always represented the term with various meanings. It has usually been connected to the military sphere, and after the Westphalian Treaty (1648) it became the field of interest of the state.

In the broadest sense, security means safety and a kind of freedom from fear, threats and physical violence. Security is reflected as safety, as well, that is the lack of danger and it represents one of the most fundamental needs. The well-known American psychologist and philosopher Abraham Maslow places safety of each person – individual immediately after physiological needs in his original approach to hierarchy of human needs (Maslow, 2014). Furthermore, Hobbes regards peace and security as the highest individual and social values (Stojanović, 2012). Certain definitions explain it as *the state* (protection of some property, current value, society), *organization* (protection mechanism in various organizational forms) and *function* (attribute of the state despite the character of its organization, political system and form of government) (Vojni leksikon, 1981), as well as “the state of the activity where there is no manifestation of danger” (Терлецкая, 2011). Security is a universal goal for everyone, yet hardly attainable. The total civilization development is marked by security deficit. The theorist Joseph Nye regards security as “oxygen, which is simply accepted as the existing fact until the moment you start to miss it, and you cannot think of anything else” (Nye, 2003).

The important transformation of approach to security started at the end of the eighties of the last century. Military threats stop to be the central threats to the state security and besides the state, new subjects and objects of security emerge in the foreground, which makes the state lose its central primacy. Thus, the term security *has widened* (horizontal level) and *deepened* (vertical level). It has expanded from military to non-military fields – human rights, climatic changes, political and economic stability, and it has also deepened – the focus has moved from the state to an individual, the society, region, international system and global society (Ejdus, 2012). Therefore, the language of security is no longer restricted to the military sphere. Theorists have recognized and offered, and the public has accepted the so-called sector approach. Thus, sector represents a way to unpack the confusion of the whole by breaking it into several parts, which are analytically separated according to some special aspect. In that light, the theorists of the famous Copenhagen School make difference between military, ecological, economic, social and political sector (Buzan, Weaver and de Wilde, 1998).<sup>1</sup> Slight variation is expressed by some authors a

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<sup>1</sup> This division does not surprise because Barry Buzan in his early papers when dealing with national security regards the national security system as “the set of activities, which comprises five areas of the state operation: military, political, economic, social and ecological sphere” (Buzan, 1991).

decade or two after that, where sectors are divided into military security, regime security, social security, ecological security and economic security (Collins, 2010).

Ecological threats as non-military threats, whose significance in the contemporary world is on the constant increase, have an important place in the newly established approach.

## Ecology and/or environment

As with definition of many contemporary phenomena, terminological and semantic confusion surrounds the definition of ecology, as well (Table 1).

Table 1 – *Definitions of ecology in dictionaries and lexicons (prepared by authors)*

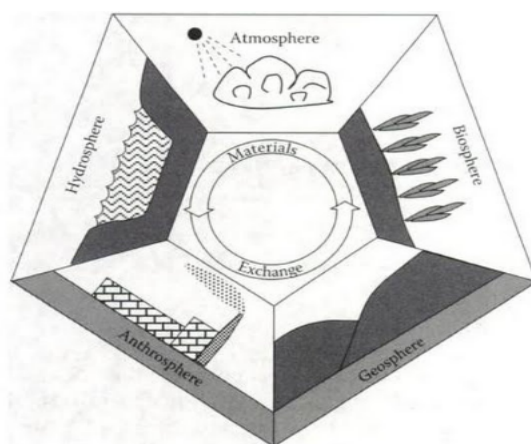
Dictionary	Main meaning
Macmillan	The relationship between the plants, animals, and the environment in a particular area.
Oxford	The branch of biology dealing with mutual relations of organisms and their physical surroundings.
Cambridge	The relationship between the air, land, water, animals, plants, etc., usually of a particular area, or the scientific study of this.
Longman	The way in which plants, animals, and people are related to each other and to their environment, or the scientific study of this.
American Heritage Dictionary	The science of the relationships between organisms and their environments.
Dictionary of Environment and Ecology	The study of the relationships between organisms, as well as their relationships with the physical surroundings.
Political lexicon	The study of the relationships between living beings and nature and environment they work and live in.

Despite the differences in understanding ecology, it has been noticed that ecology is the science (scientific discipline), whose area of interest are complex relationships of the broadest spectrum of living and non-living actors in the observed environment.

The approach of theorists is consistent with the attitudes expressed in dictionaries. Thus, Ernst Haeckel, who is considered to be its creator according to many people, defined ecology in 1866 as “the overall science about the relationships between organisms and the environment” (Aleksić and other authors, 2014). Ecology “studies the interaction between organisms mutually and between organisms and their environment with effects that organisms have on the non-living surroundings” (Lawrence 2003); “it studies the relationships between organisms, as well as the relationship with their physical surroundings” (Collin, 2004) and it represents “the science about living conditions, the relationships between living organisms mutually and non-organic part of the environment, the influence of a man on nature and consequences of their activities” (Терлецкая 2011). The complexity of action field points at the existence of many problems.

The wider public identifies ecological problems as problems of the environment. Applying the identical approach (dictionary search) the environment is “the place in which people live and work, including all the physical conditions that affect them; the conditions and influences in which people carry on a particular activity; the natural world, including the land, water, air, plants, and animals, especially considered as something that is affected by human activity (Macmillan); „the environment or conditions in which people, animals, and plants live or work; the natural world, as a whole or in certain geographical area, especially affected by man’s activities” (Oxford); the air, water, and land that people, animals, and plants live in; the conditions that you live or work in and the way that they influence how you feel or how effectively you can work” (Cambridge); the air, water, and land on Earth, which is affected by man’s activities (Longman) and “the totality of the natural world” (American Heritage Dictionary).

On the basis of the comparative analysis with the comprehension of ecology, the main difference that is noticed is related to man’s activities. In this context, the following picture can be both connected to ecology (totality and connection of surroundings) and the environment (noticeable influences of a man).



Picture 1 – Ecology/environment (scheme)

(Todd, N. J. (2005): A Safe and Sustainable World: The Promise Of Ecological Design. Washington, D.C.: Island Press, p. 36)

Theorists express different views. Some of them insist that ecology as the science should be separated from the protection of the environment and nature, which are the applied parts of ecology; that there should be difference between communal hygiene and ecology and ecologists (Bachelor of Ecology, Bachelor of Ecological Engineering, etc. versus the environment fan) (Aleksić, 2014). The other theorists think that the terms environment and ecology can be equally used and they do not insist on difference. To ecologically study living beings does not mean to research only them as a special natural species, but to address the problem comprehensively with wider habitat and all conditions of life and development that these beings are involved with (Bajagić, 2012).

Ecology has been undoubtedly established after the environment. However, it is surely in focus because it emerged when economic human activity (uncontrolled consumption of natural resources) visibly started to degrade the environment and questioned not only human survival<sup>2</sup>. Destructive activities of nature have not stopped by the occurrence of ecology. Precise chroniclers have recorded that from 1979 until 2004 there were more than 230 natural disasters. However, beginning from a gas leak incident in the Indian city Bhopal in 1984, they recorded until 2004 nearly 100 catastrophes caused by a man (Collin, 2004). A consumer of this information probably does not think whether this is “the ecological problem” or “the environmental problem”. Ecology is getting more omnipresent. Nowadays, a few human activities can ignore ecology. Ecology becomes an unavoidable part to everyone who analyses the environment that is the totality of mutually connected external and internal factors.<sup>3</sup>

Not questioning the need for as clear as possible semantics and precise conceptual – categorical apparatus, one should bear in mind the similarity of the term expression in different languages. In this context, terms represent the form, but the essence is more important. Despite terminological traps, the basics of man’s action nowadays should be protection from the physical surroundings response to their activities that is how to be and remain safe to themselves and the environment in such surroundings.

## Ecological security as a type of security

The study of ecological security is a recent phenomenon. “The Resolution on international ecological security” adopted by the UN General Assembly in 1987 in response to the Chernobyl disaster is considered to be a reference written document.<sup>4</sup> From scientific point of view, the accepted manner of ecology and security symbiosis represents sector approach to security. The reference object in ecological sector is the environment. Within approach to the term security, the explanation of ecological security is included. Thus, ecological security is the state of security of each individual, the society, state and nature from excessive danger to the environment, that is preservation and protection of vital interests of an individual and the environment from negative anthropogenic and natural effects, thus being the significant component of the state security (Черняховский, 2007); that is the state of protection of ecosystems from chemical and nuclear catastrophes, industrial pollution, land or water degradation, local and planet ecological changes (Ejdus, 2010); “the system of scientific, technical, social, organizational and other measures that guarantee mutually harmonic existence and development of nature and man and the state of protection of an individual, the society and state from the effects of an-

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<sup>2</sup> There is a large number of endangered species (over 80) that are alphabetically arranged from the Amsterdam albatross to yellow ash frog (more in Collin, 2004).

<sup>3</sup> There are many techniques of analyzing how the environment influences phenomena and processes. Ecological influence is a constituent of one of more famous and highly positioned managerial techniques – PESTLE analysis.

<sup>4</sup> The important report “Our common future” by the World Commission on Environment and Development (WCED) was published the same year. The report warns, inter alia, there is a danger that ecological degradation and resource scarcity will lead to instability and conflicts (Ejdus, 2012).

thropogenic influence to the environment, as well as natural disasters and catastrophes (Russian World Encyclopedia)<sup>5</sup>; then, the combination of actions and processes like development of new technologies that do not lead to damage to nature, individual and humankind as a whole (Терлецкая, 2011).

For some theorists from the group of those who advocate clear distinction between the terms ecology and environment, ecological security should enable sustainable development whereas the environmental security should be connected to removing threats to political stability caused by ecological problems (Rogers, 1997).

In response to ecological problems, national and international legislation take an active part, international conventions are adopted, inspections are conducted, agencies are established, standards are made,<sup>6</sup> media, citizens, and organizations are included. The interest in ecological problems is illustrated by the fact that during the 20<sup>th</sup> century over 900 multilateral treaties in the field of environmental protection were signed, and they represent the area of interest of over 28.000 ecological non-governmental organizations in the world (Bajagić, 2012).

Security faces various risks. In ecological milieu a risk represents certain level of probability that some activity will directly or indirectly cause a danger to the environment, life and health of people and break the optimal relationship in the natural surroundings. Ecological security should enable risk minimization without selective approach. Not only wealthy individuals, societies and states should be ecologically secure, although the history is full of opposite examples.<sup>7</sup>

Sector approach demands that ecological security should be regarded as the content of integral security. Taking this into account, ecological security has to be the joint venture of many, especially state actors. The military organization as the system, where security is *de facto* and *de jure* the basic field of work (occupation), is not an exception.

## Military organization as ecological security actor

Organization is a civilization creation made from the need to achieve by collective work what cannot be done by individual work. According to one of many classifications, an organization can be profit and non-profit one. In such context, the military organization is non-profit organization in which the employees by collective work achieve socially justified goals connected to the state security and society as a whole.

Nowadays in defense structures, especially in the ministries responsible for defense and the Armed Forces, there are significant reasons for interest in ecological security. There is a growing need to properly understand ecological challenges, risks and threats both within their organizations and broader social surroundings. Having this in mind, special interest should be related to those segments where the military structures have more expressive interests, that is ecological problems of local governments, the problem

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<sup>5</sup> <http://politike.ru/termin/ekologicheskaja-bezopasnost.html>

<sup>6</sup> ISO 14000 is a family of over 25 standards. The methodology that it is based on is "Plan-Execute-Check-Act". The Eco-Management and Audit Scheme (EMAS) EU program regulated by the European Council Directive No. 761/2001 is also well-known.

<sup>7</sup> In the so-called "countries in transition" high levels of industrial pollution and practice of inadequate disposal of various (sometimes imported), even nuclear waste have been recorded (Petrović, 2012).



of the existing technical-technological resources and the field of arms and military equipment production, that is defense industry<sup>8</sup> they rely on.

In the context of source of ecological threats not even the Armed Forces are immune to natural disasters. They are vulnerable to floods, earthquakes, fires, avalanche, hurricanes, acid rains, rock fall, landslide, extreme temperatures, the lack of drinking water, etc. (Novaković and Mačak, 2015) like all other social structures. Thereby, their role is often more emphasized then because besides "self-assistance" they are required to render assistance to "civil structures". Despite the fact that the Armed Forces have to include such scenarios in their plans in the mentioned field, greater engagement should be expressed in the sphere of potential catastrophes, which are the result of human activities, and the most important engagement should be focused on ecological risks of their own activities.

It is the fact that goals of the military activities are often not in accordance with goals of ecology. Peace in ecological sphere is hardly attainable without armed conflicts. While preparing for them accommodation facilities should be built, obstacle courses and training grounds should be put into use, arms and military equipment should be produced, stored and transported, etc. The necessity of rather complex and multipurpose military installations often poses risks of ecological degradation for broader social community (more in Lawrence and other authors, 2015). There are numerous production companies in service of the military organizations. From ecological point of view, the environmental pollutants are mainly representatives of the industry that uses chemical-technological, engineering processes for production of arms and military equipment. In the majority of countries these are factories for production of ammunition and explosive ordnance, and in some countries these are factories that produce nuclear, biological or chemical weapons. Ecological risk from pollution in production plants can be present during technological process, disposal of production process remains (waste)<sup>9</sup> and risks in case of hazardous events (Milinović and other authors, 2008).

The Armed Forces are not the greatest environmental pollutant at peace. However, they are often the greatest pollutant in armed conflicts they prepare for. A war deserves special consideration. Although it has overcome its original meaning, a war in the discourse of armed conflicts still represents the most destructive form of armed conflict, where often something and someone who is not an adversary is killed.<sup>10</sup> The very physiognomy of war

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<sup>8</sup> "The defense industry" is not immanent to all countries. The term itself is debatable because a large number of countries produce arms and military equipment for attacks, often thousand kilometers away from their borders. In this context, especially from ecological point of view, the explanation that they "defend their interests" on the foreign ground is unconvincing.

<sup>9</sup> Waste can have 5 different states of aggregation (gaseous, solid, amorphous solid, liquid and mixed). Its dangerous effect is usually neutralized by the use of aggressive substances and chemical compounds, although larger quantities of neutralized waste have harmful effect on the environment (Milinović and other authors, 2008). Dangerous waste is not often treated in compliance with regulations, which results in its accumulation, and improper management due to restricted storing and warehousing capacities.

<sup>10</sup> Waging the chemical war in which Americans used 64 million liters of chemical substances in South Vietnam resulted in the destruction of 2 million hectares of forests, and the land expelled from 26 million craters caused by bombing amounts to 3.5 billion cubic, which is 50 times more than the quantity of the land and sand dug out in the Panama and Suez Canal together (Specijalni rat, 1974). In Vietnam the experiments with the so-called "firestorms" were conducted, as well, large fires were generated, over 50.000 rain bombs were used; in the Gulf War the military bomber aircraft set around 700 oil plants on fire for 8 months, and during NATO intervention in FRY munitions with depleted uranium were used (Klem and other authors, 2017). The news that during 78 days of bombing in FRY the ecosystem was threatened, chemical plants, oil refineries and storages bombed is disturbing, but rather general. What disturbs

adapts to changes. Therefore, the military theorists are acquainted with the term “ecological warfare”. One of the most comprehensive sources of scientific and expert data related to the military action in the Balkans (from the period of SFRY) – the Military lexicon defines “ecological warfare” as the destruction and pollution of nature and environment of people (water, air, plants and animals) in order to create unfavorable conditions for life and fight of the Armed Forces and population of an adversary. This type of warfare uses different chemical, biological and other ordnance (chemical agents, herbicide, flammable substances, explosive devices with time effect, the so-called meteorological weapons, etc.). It has also been applied in local wars, and in nuclear war ecological warfare would spread with catastrophic consequences (Vojni leksikon, 1981). It can be easily concluded that although the above-mentioned definition was created four decades ago, that is before the Copenhagen School and sector approach to security, it preserves the feature of applicability in the modern age. There are papers on the need to consider the newly established field of applied ecology called war ecology that was created in order to understand the relationship between war and ecology (Machlis and Hanson, 2008), although those relationships are sometimes difficult to understand (Picture 1). Gloomy forecasts envisage that biosphere will probably continue to suffer for humankind, which is constantly preoccupied with war (Lawrence and other authors, 2015). War can never be made easy, humane and clean!



Picture 2 – *Bombing of oil refinery in Novi Sad*

(Klem, E., Bakrač, T. S. and Milanović M. (2017): Ecological Consequences of Warfare, *Vojno delo* 4/2017, Beograd, Media Centre „Odbrana”, p. 132)

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more are the less known black rains (unburned particulates of oily substances from daily fires), the change in behavior of pets and some species of animals in Belgrade Zoo (including cannibalism and self-mutilation), abandoning natural habitats by some species of birds, mass killing of fish, honey with toxic substances, etc. (Pavlović, 2012).

Due to growing awareness of the security aspects of environmental problems, defense structures had to react. Since 1993, when the job vacancy of the Deputy Secretary of Defense in charge for ecological security was formed in the US Department of Defense (Ejdus, 2012), the majority of the militaries have included ecological topics in strategic and doctrinal documents and documents at lower hierarchical levels. As if solving the dilemma: in the short term *have* (victory, fame, loot) or in the long term *be* (survive), the contemporary military organizations advocate at least declaratively the use of ecological ethics and the famous "3 R" principles of ethics - Respect, Responsibility, Results towards the environment. At first glance the following principles seem to be related to an organization that deals with ecology, and not the military organization:<sup>11</sup>

- to encourage sustainability as lifestyle;
- to proactively take into consideration ecological consequences of all activities;
- to create and support economic and ecologically sustainable solutions;
- to continue to bear corporate responsibility;
- to think about surroundings and systemic approach to risk management during life cycles of projects and programs;
- to use scientific, economic and social knowledge for comprehension of the context of environment; and
- to use an open and transparent process, which respects attitudes of individuals and groups that are interested in our activities.

The military organizations have been more often enemies than friends to the environment. They still have the unfavorable effect on the state of the environment by their engagement in peacetime, and especially their engagement in the state of emergency, immediate war danger and a war itself. Measures, procedures and activities that can be used to remove, minimize or at least reduce such unfavorable effect require seriousness of approach at all decision-making levels. The technique of the modern age should not necessarily have unfavorable features, but on the contrary, it can be a chance for improvement.

## Advanced Technology and Digitalization as a Chance for Improvement of Ecological Security of the Military Organizations

The use of innovation and the most modern products has always been characteristic of the militaries and battles or, as Toffler would emphasize, since the ancient times when the weak Israelite David defeated the Philistine Goliath with the help of the highly technological weapons at that time – catapult (Toffler, 1998). However, until the Industrial Revolution, the military activities did not largely damage nature. The military technologies of the Industrial Age introduced innovations, often ecologically destructive, such as chemical agents, destructive explosives, missile armament, nuclear and hydrogen bombs.<sup>12</sup>

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<sup>11</sup> <http://www.usace.army.mil/Missions/Environmental/Environmental-Operating-Principles/>

<sup>12</sup> The other products of previous technologies used by the militaries have also caused serious degradation of nature and significantly decreased its regenerative power. A can falls apart for 100-500 years, plastic non-biodegradable bag for a million years, and a glass bottle never.

Nowadays we have the age of knowledge, which becomes „the central resource of productivity“ (Toffler, 1998). The military is a pioneer in production and use in many fields that are a constituent of the digital discourse today. The first computer, Internet, communication devices, audio-visual devices and various software solutions have been made in the military or for the military purpose. Nowadays the military uses the modern age of electronics for tangible (hardware) and intangible (software) solutions, which seem to ignorant people like something not reachable or too futuristic. When it comes to software, it is hard to define the limits of its development. The power of digitization is illustrated by the following example related to software: not long ago (in the nighties of the last century) a car was 90% made from hardware and 10% from software whereas today such relation is 50%/50%, and very soon it will be 10%/90%. Undoubtedly, in the modern militaries this is applicable to the field of modernization of transport and fighting vehicles (autonomous movement of towing vehicles, planes, ship, tanks, etc.), mobile platforms, communication and crypto protective devices, surveillance equipment (radar, optoelectronic devices), etc.

The increase in energetic efficiency contributes to ecological security. Not questioning the significance of energy from fossil fuels (often fatal for ecosystem) so far, solar and geothermal energy, energy from biomass (related to treatment of organic waste), wind energy and energy from other sources (energy of tide, heat energy of sea and energy of sea waves (Stević and other authors, 2010) are used for the military purpose. Having this in mind, using contemporary technological achievements not only contributes to construction of new facilities, but to adaptation and reconstruction of the existing facilities of the military infrastructure, barracks, obstacle courses and training grounds, as well.

The industry in the service of the military today should be comprised of modern production based on research and development and completely sensitive to environmental requirements. Although the necessary resources for subsequent reactions (when ecological incidents have already happened) are made, production should be focused on prevention. Thus, „dirty technologies“ and harmful substances such as lead and asbestos become the past, and plasma and nanotechnologies, new composite materials and „smart alloys“ the future (Stević and other authors, 2010). Electromagnetic rail guns also announce the decreased use of gunpowder, satellite and GIS have rendered a long time ago assistance to the military formations not to get into the fog or sandstorm, thermo vision makes monitoring easier<sup>13</sup>, a robot places sensor where a man does not dare – contaminated atmosphere or factory chimney, audio barriers eliminate noise around military airports, tank, artillery and missile plants, 3D models and 3D printers save resources and decrease length of production processes, etc.

Natural environment is no longer the only place where the military activities are practiced, not only of an individual, but many units, as well. Owing to virtual reality and artificial intelligence, the land, water and air are much less needed during training, and thus less vulnerable. Simulators (Picture 3) describe reality more faithfully and exclude the need to make paper targets (trees are not cut in order to get cellulose), they prevent explosion from setting the environment on fire and causing stress of animals, they decrease the use of kerosene<sup>14</sup> and do not disturb underwater peace. Miniaturization of cameras on drone or helmet of a soldier enables recording the real military activities (e.g. real tank battles), and then faithful simulation and practice of future crew.

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<sup>13</sup> It is successfully used in prevention of coal self-ignition in warehouses.

<sup>14</sup> It is considered that the military planes use 2/3 of ecologically harmful kerosene.



Picture 3 – Use of simulations in military training  
(<http://sas-egypt.net/Simulations/advanced-weapons-simulator-sas-aws/>)

IT has changed the role of commander. Digitalized display of the battlefield and its surroundings in real time shortens the response time of a decision-maker and at the same time it decreases the risk of harmful consequences to actors of battle and the environment. The decision-making supporting tools<sup>15</sup> as a rather modern product related to expansion of IT make the work of decision-makers much easier.

Modern technology has enabled the principle of “continuity” that is constant alertness in monitoring to be absolutely present. Relevant data manipulation has been constantly speeded up. Various records of ecologic indicators (European Environment Agency, 2014), which contain data for ecological environment assessment that is ecological risk assessment can be more easily recorded and edited, archived and saved, analyzed and searched, put in a desired layout, selected and adapted to a user.

Due to universal representation, the other military organizations are not spared “the ecological battles”. The study and adaptation of foreign experiences, which are assessed as useful, can help enhance the existing own measures, activities and procedures. Nowadays there are neither strategic and doctrinal documents (the National Security Strategy, the Defense Strategy, the White Paper on Defense) nor annual reports on work that do not include the field of ecological security in their content. The IT advantages have made it possible that it is no longer a rarity to select very quickly on the official websites of the Armed Forces information on planning, organizing, managing and evaluating, finance and normative and legal regulation of the field of ecological security.

<sup>15</sup> Thus, some militaries use the commercial software called @RISK, which is the addition to the program for table calculation Microsoft Office Excel (Mačak and other authors, 2017). According to the 2016 data, 64 universities and 214 large corporations in the world buy the abovementioned software.

Rather digitalized media that most militaries possess today are also involved in spreading “green news” and promoting “examples of good practice”, even if it means the use of adequate dustbins for waste selection in the military camps.

From ecological point of view, the goals of the contemporary military organization should be: more intensive and efficient training, more responsible use of resources, introduction of healthier technologies, reduction in emission of harmful substances and waste recycling, adoption of ecological standards and active participation in the initiatives for protection of the environment and education of employees when it comes to protection of the environment. Reaching the stated goals will make the military organization important support to ecological security. Digitization will make the way to their achievement easier.

## Conclusion

Security has a long time ago stopped to have only the state and military meaning. One of its meaning which must not be ignored in the modern world is related to ecological sphere. Today ecological risks greatly differ from the ones in the past. Undoubtedly, humankind is in the millennium of escalation of ecological problems. The forms of environmental threats get new, mainly unfavorable features. Unfortunately, the bright face of industrialization and technological boom has its back rather expressed in the field of ecology. Devastation, desertion and destruction of the environment have been multiplied by the use of sophisticated weapons and military equipment by the military organizations. The military activities will continue to cause ecological degradation in the future period and one should not be misled by the illusion that those activities will ever become harmless to the environment. However, there is more pronounced need for the modern militaries to work more intensely on minimization of damage in the environment. Today, more than ever, the militaries should strive to harmony with nature. The 21<sup>st</sup> century military planners are forced to look into the future in greater details than their previous predecessors including a lot more aspects. The issues of ecological security are unavoidable. Proper understanding and use of digitization achievements in this exhausting and constant work through ecologically acceptable solutions will bring multiple benefits to both the military organization and the environment.

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# THE SECOND MISSION OF THE SERBIAN ARMED FORCES – GENESIS, CHARACTERISTICS AND MEDIA TREATMENT

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Starting from the belief that security risks in the modern world confirm indivisibility of security at a global level that is a very high level of interdependence between states and regions, the Republic of Serbia, acting on its foreign policy plan, advocates affirmation of cooperative security concept.<sup>1</sup> In accordance with this, it takes an active part in the process of cooperation with other states within international organizations in order to strengthen security and peacekeeping in the world. The Republic of Serbia gives a concrete contribution to keeping international peace and stability by participation of the Serbian Armed Forces members in UN multinational operations, which has expanded during the last years. Furthermore, bearing in mind the fact that the EU membership is one of the priorities of its foreign policy, the Republic of Serbia (although it has the status of a candidate for admission, and not a full member) also participates in EU multinational operations in accordance with its capacities.

The first part of this paper presents the historical review of participation of the Armed Forces of our country in UN traditional peacekeeping missions, as well as the review of the undertaken activities (after renewal of participation in 2002) in order to create preconditions for greater stepping of the Serbian Armed Forces on international scene. The second part shows results of the research during which there were attempts to come to knowledge about relation of media to participation of the Serbian Armed Forces members in UN and EU multinational operations by analysis of media content.

Key Words: *SAF missions, UN and EU multinational operations, media reporting*

## Introduction

The effect of foreign policy of each state including the Republic of Serbia on national security cannot be questioned and it is multidimensional. Moreover, national security of the state depends largely on the success of foreign policy decision-makers in

<sup>1</sup> See more on cooperative security concept in Dragan Simić, *Nauka o bezbednosti – savremeni pristupi bezbednosti*, the Official Gazette of the Federal Republic of Yugoslavia and the Faculty of Political Sciences, Belgrade, 2002, p. 83-101.



assessing the current situation and potential direction of development of relations in the international community, then on the choice of objectives, means for their achievement and concrete activities that are undertaken. "It cannot be denied that foreign policy affects predominantly security of some state. Wise, controlled and pragmatic foreign policy affects inevitably the state of its total security."<sup>2</sup> With respect to the fact that many authors define differently the relation of foreign policy and national security, it can be still concluded that in professional public there is a high degree of agreement that foreign policy of each state has a very great influence on its security. The example of the Republic of Serbia is surely not an exception. Indeed, it confirms the abovementioned statement.

Considering the fact that foreign policy is a very important element of security policy, in its foreign policy the Republic of Serbia starts from the belief that development of cooperation at a bilateral and multilateral level can significantly contribute to national security in terms of the reduction of a danger of a state being threatened. In this context, it advocates strengthening of the role of the UN as a universal organization, getting the status of the EU member and active participation in the NATO programme "Partnership for Peace" (in those activities that are planned for the states, which do not have the status of the North Atlantic Alliance member), taking into account the opinion on neutrality of the state in relation to the existing military alliances.

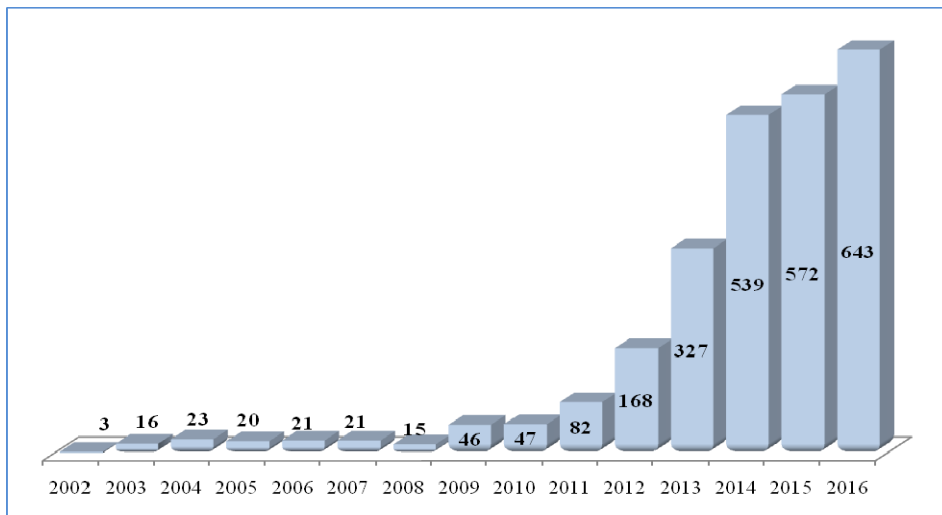
Following the tradition of participation in UN peacekeeping operations, the Republic of Serbia gives a concrete and significant contribution to the efforts to keep the peace in the world. According to its scope of participation in UN and EU multinational operations, which has expanded in recent years,<sup>3</sup> the Republic of Serbia is among the first ten European countries, and among the Western Balkans countries it is in a leading position. Currently, the Serbian Armed Forces members take part in six UN peacekeeping missions: MONUSCO (DR Congo), UNMIL (Liberia), UNFICYP (Cyprus), UNIFIL (Lebanon), UNTSO (Middle East), MINUSCA (Central African Republic) and four EU operations: EUTM Somalia, EUTM Mali, EUTM RCA and EUNAVFOR Operation Atalanta.<sup>4</sup> At this moment, 344 Serbian Armed Forces members are engaged. At the same time, the Republic of Serbia is on the 49<sup>th</sup> place among contributors out of 127 countries participating in multinational operations. As a sign of certain recognition for contribution that it gives to the UN efforts, three certified UN courses are conducted in the Peacekeeping Operations Centre, which is a great acknowledgement, having in mind that only two centres in the world have such thing.<sup>5</sup> Besides that, the first regional conference about participation of the Western Balkans countries in UN peacekeeping missions was held in October 2014 in Belgrade.

<sup>2</sup> Mitar Kovač, „Politička ili vojna neutralnost Republike Srbije“, Ekonomija i bezbednost, CIMIC Centre, Belgrade, 2009, p. 152.

<sup>3</sup> See Graph 1.

<sup>4</sup> [www.mod.gov.rs](http://www.mod.gov.rs), [www.vs.rs](http://www.vs.rs)

<sup>5</sup> According to the data of the Peacekeeping Operations Centre announced at the Regional Conference "Media, multinational operations and migrant crisis" held in Kovačica at the beginning of December 2017.



Graph 1 – Number of SAF members engaged in UN and EU multinational operations (from 2002 until 2016)

## Continuation of rich tradition

The Socialist Federal Republic of Yugoslavia as one of the UN founders, was rather noticeable among members of the world organization by its participation in „traditional“ peacekeeping operations. Yugoslavia gave a significant contribution to peacekeeping in the world by affirming the principle of peaceful active coexistence as one of the founders of the Non-Aligned Movement.

Furthermore, the state leadership at that time thought that this orientation affected the raising of the country's reputation in the international community. Therefore, 11-year-long engagement of the Yugoslav National Army members in Sinai from 1956 until 1967 under the auspices of UNEF-1 peacekeeping mission resulted in participation of over 15.000 members of the Yugoslav Army. The engagement in UN peacekeeping missions in the following period (in Congo, Yemen, Iraq-Iran, Namibia and Angola) was not so massive. However, it was assessed as very successful, which is illustrated by the UN medals from that period.

During the wars in the territory of former Yugoslavia, Serbia was subjected to sanctions for many years within the Federal Republic of Yugoslavia and it was practically in international isolation. In such circumstances, in the territory of former Yugoslavia the international community initiated peacekeeping operations, which differed very much, according to their characteristics, from traditional ones (conducted so far). Moreover, in the period after the Cold War, the nature of conflicts in the world has largely changed (the focus of conflicts has been transferred from interstate to a level of intrastate conflicts), and the way of their resolution, as well.

After the break lasting for several decades, from 2002 Yugoslavia has renewed its engagement in UN peacekeeping operations (mainly by sending military observers). Preparations for their engagement were full of numerous problems (status, equipping, etc.), which were mainly caused by the lack of legal regulation. Certain steps were made by establishment of the Peacekeeping Operations Centre (2003) and passing certain legal acts (2004). However, it was not enough for more active participation in peacekeeping operations.

Only by passing the set of defence laws in 2009, preconditions were created for a stronger step forward in terms of the Serbian Armed Forces members participation in UN peacekeeping operations. Besides passing the National Security Strategy and the Defence Strategy of the Republic of Serbia, as well as amendments to the Law on Defence and the Law on the Serbian Armed Forces, enacting the Law on engagement of the Serbian Armed Forces and other defence forces in multinational operations outside the Republic of Serbia borders is particularly important. Moreover, its provisions regulate very precisely types of peacekeeping operations in which the Serbian Armed Forces members can participate, then the process of decision-making about their engagement, as well as their status, rights and obligations during participation in multinational operations.

Besides missions under the UN auspices, the members of the Ministry of Defence and Serbian Armed Forces have recently participated in EU multinational operations (training of Somali Forces, operation against pirates in Somalia, training of the armed and security forces in Mali and the Central African Republic). The basis for the engagement of the Serbian Armed Forces members in these operations is the fact that the EU membership is the priority foreign policy objective of the Republic of Serbia. Since the Republic of Serbia has the status of a candidate for admission, and not a full member, by signing adequate treaties preconditions have been created for the engagement of representatives of the Republic of Serbia in operations and missions under the EU auspices. Thus, Serbia expresses a commitment to give its contribution to the Common Foreign and Security Policy of the EU.<sup>6</sup>

## Normative-legal aspect

Participation of the Serbian Armed Forces members in multinational operations is regulated in accordance with provisions of numerous documents, which constitute normative-legal framework of their engagement outside the Republic of Serbia borders.

“As the supreme legal act, the Constitution of the Republic of Serbia defines the position and competences of the Armed Forces, their use outside the borders of the country, as well as the fact that the Serbian Armed Forces are under democratic and civil control. According to the Constitution, the Serbian Armed Forces defend the country from external threats and they conduct other missions and tasks, in compliance with the Constitution, the law and principles of the international law that regulate force”.<sup>7</sup>

<sup>6</sup> In this context, Serbia has joined the EU Battlegroup Helbroc.

<sup>7</sup> Vanja Rokvić: *Položaj vojske u političkom sistemu Republike Srbije* (see: Mladenović, Ivaniš, Rokvić, *Razvoj institucija i izgradnja političkog sistema Srbije*, Faculty of security studies, Belgrade, 2012, p.107).

The National Security Strategy of the Republic of Serbia represents the initial document, which determines the foundation of security policy in protection of national interests of the Republic of Serbia. This main strategic document that directs the engagement of defence resources and development of normative, doctrinal and organizational solutions of the Serbian defence system, defines the missions and tasks of the Serbian Armed Forces including participation in peacebuilding and peacekeeping in the region and world. The White Paper on Defence emphasizes the significance of participation of the members of the Ministry of Defence and Serbian Armed Forces in UN multinational operations, and also EU ones because the EU membership is the priority foreign policy objective of the Republic of Serbia.

The Law on engagement of the Serbian Armed Forces and other defence forces in multinational operations outside the Republic of Serbia borders, which was passed in 2009, regulates in detail the issue of participation of the Republic of Serbia in multinational operations. The rights and obligations of competent authorities in relation to participation of the Serbian Armed Forces members in multinational operations are already mentioned in the main provisions of the abovementioned law. The decision-making process on participation of the members of the Ministry of Defence and Serbian Armed Forces in multinational operations is regulated in detail (from decision-making on engagement until potential withdrawal from a mission).

In compliance with legal provisions, the decision on engagement of the Serbian Armed Forces in multinational operations is made by the Government of the Republic of Serbia on the basis of the Annual plan of engagement of the Serbian Armed Forces in multinational operations that is prepared by the Ministry of Defence in accordance with defence regulations. The Annual plan of engagement stipulates: the name of planned missions that is multinational operations; their mandate; a review of missions that is multinational operations, whose conduct is ongoing with assessment of the situation; objective to be met by engagement of the Serbian Armed Forces and other defence forces in multinational operations that are planned in the current year; available forces and material and financial resources, which can be put at disposal for taking part in multinational operations, as well as other elements, which are significant for the approval of participation in those operations.

## System activities

Besides normative-legal aspect that is regulated in detail, preconditions have also been created within the Serbian Armed Forces for a greater step forward in the field of engagement of their members in multinational operations.

The knowledge from the field of social sciences provided by curricula in the military schools is the adequate basis for understanding international relations, comprehending national interests of the Republic of Serbia, as well as realizing the need and importance of participation in UN and EU multinational operations.

The training system of the Serbian Armed Forces members has been modified and adapted to contemporary requirements, which are made in executing the second mission of the Serbian Armed Forces (participation in peacebuilding and peacekeeping in the

region and world). Due to interoperability with other participants in multinational operations, the existing competences and skills (if there are potential variations) are improved if necessary by additional training in order to reach the level of full compliance.

Starting from the belief that a high level of foreign languages knowledge (mainly English) is necessary for successful execution of tasks in multinational operations at all levels (especially in mission headquarters), the Military Academy carries out continuously training of the members of the Ministry of Defence and Serbian Armed Forces within STANAG programme.

Only the Serbian Armed Forces members who have previously been adequately prepared and equipped with adequate equipment are sent to UN and EU multinational operations. The Peacekeeping Operations Centre issues the certificate for the training level of the Serbian Armed Forces members, who are candidates for participation in multinational operations. In addition to detailed preparations at a national level, preparations at international level (multinational) are carried out if necessary. In difference to the period after the continuation of participation in multinational operations (2002), when mainly individuals were engaged (military observers, staff officers, etc.), currently the Serbian Armed Forces company and platoon (in Lebanon and Cyprus) are engaged in multinational operations. Moreover, the interest for participation in multinational operations is very high.<sup>8</sup>

In compliance with guidelines from the National Action Plan for the implementation of the UN Security Council Resolution 1325, the Ministry of Defence and Serbian Armed Forces enable much greater representation of women in the system (in comparison to the previous period).<sup>9</sup> While launching competition for admission of civil candidates to the military schools, as well as possibilities of acquiring the status of a professional soldier, there is no discrimination in terms of gender equality. The same conditions are provided for candidates of both gender. However, participation of the female members of the Ministry of Defence and Serbian Armed Forces in multinational operations is not in a direct proportion to representation of women in the system in total (percentage of participation in multinational operations is at much lower level).

## Some aspects of media reporting

Presentation of results of the conducted research has been used to show what media treatment of the Serbian Armed Forces second mission was like from 2010 until 2017 that is how media referred in this period to the abovementioned subject of the research. The 2010 year has been taken as the beginning of analyzed period, having in mind that preconditions for greater participation of the Serbian Armed Forces members in multinational operations were created at that time (the adequate normative-legal regulation was provided, necessary preparations in the system were carried out, etc.). The sample of analyzed media were eight newspapers and four weekly magazines, as well as eight TV

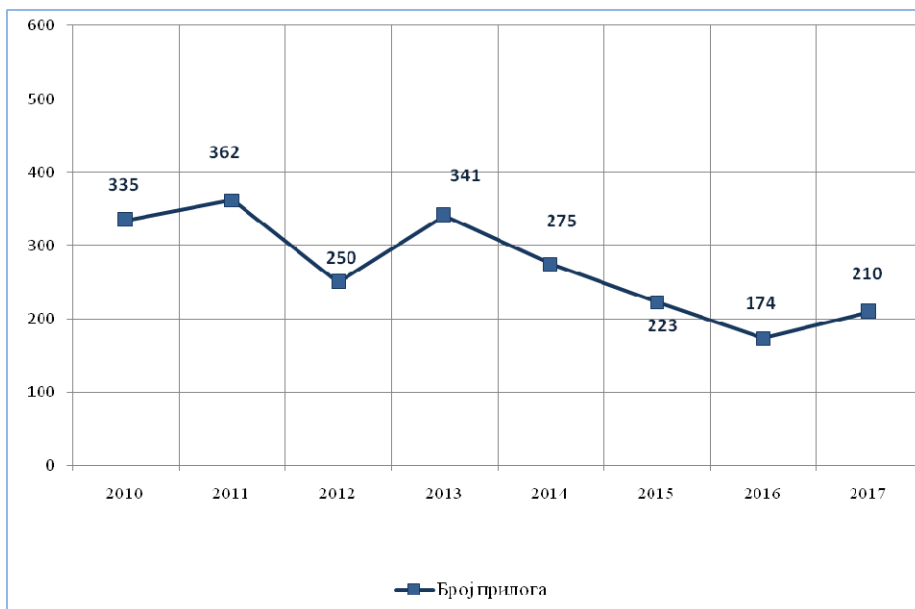
<sup>8</sup> Around 4.000 Serbian Armed Forces members have filled in a questionnaire and thus expressed their wish to take part in multinational operations.

<sup>9</sup> According to the statement of Director of the Strategic Research Institute Jovanka Šaranović in the panel discussion "Gender equality and youth", now we have around 20.44% of women in the system. (Source: RT Vojvodina, 21<sup>st</sup> November 2017).

and one radio station.<sup>10</sup> The main criterion when selecting the abovementioned media is based on the continuity of the existence with prior respect for available data on press circulation and ratings of television stations.

Results of the conducted research, in which content analysis was mainly used, have provided answers to several questions: how much publicity in media there was, what the value orientation of analyzed reports was, which journalist forms were mostly used, whether the authors of reports are journalists or news agency, etc. On the basis of the abovementioned, it is possible not only to review the existing situation, but also to consider options for the improvement of the current situation.

This paper shows the results of content analysis of 2.170 reports from the selected sample of printed and electronic media.<sup>11</sup> At an annual level media which have published 271 reports on average that is 0.74 reports daily have been analyzed. On the basis of indicators of the scope of publicity, a high level of media interest for participation of the Serbian Armed Forces members in multinational operations is evident.



Graph 2 – The number of analyzed reports in the period 2010-2017

At the same time, the difference in the intensity of media reporting is obvious: in the first half of the analyzed period more reports were published on average than in the second part of the period. This result can be explained by the fact that in the first couple of

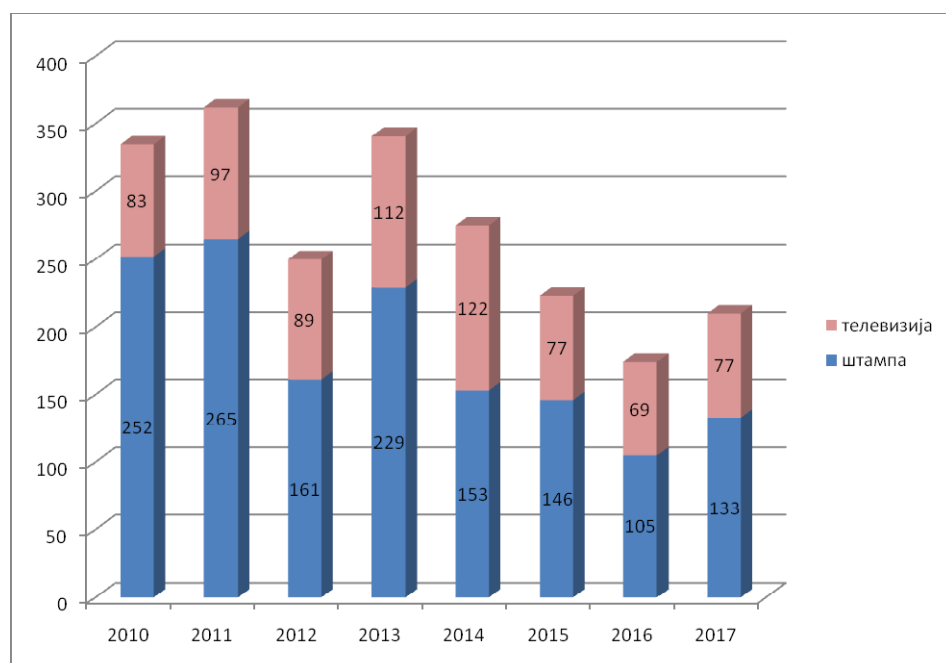
<sup>10</sup> Newspapers: *Politika*, *Večernje novosti*, *Dnevnik*, *Blic*, *Alo*, *Kurir*, *Danas* and *Narodne novine*. Weekly magazines: *NIN*, *Vreme*, *Svedok* and *Pečat*. TV stations: RTS1, RTS2, Pink, RTV, B92 (O2TV), Prva television, Studio B and Happy. Radio station: Radio Belgrade 1.

<sup>11</sup> See Graph 2.

years more massive engagement of the Serbian Armed Forces members outside the country's borders has been a novelty in the engagement of the Armed Forces. On the one hand, it has contributed to the interest of media in this sphere, and on the other hand, there has been the need to inform the public about that mission of the Armed Forces, in which media, of course, have the important role.

Moreover, during the analyzed period in total, the uneven distribution of reports in the press and on TV stations is evident.<sup>12</sup>

In printed media there was twice more reports (180 on average) than on TV stations (91 on average).

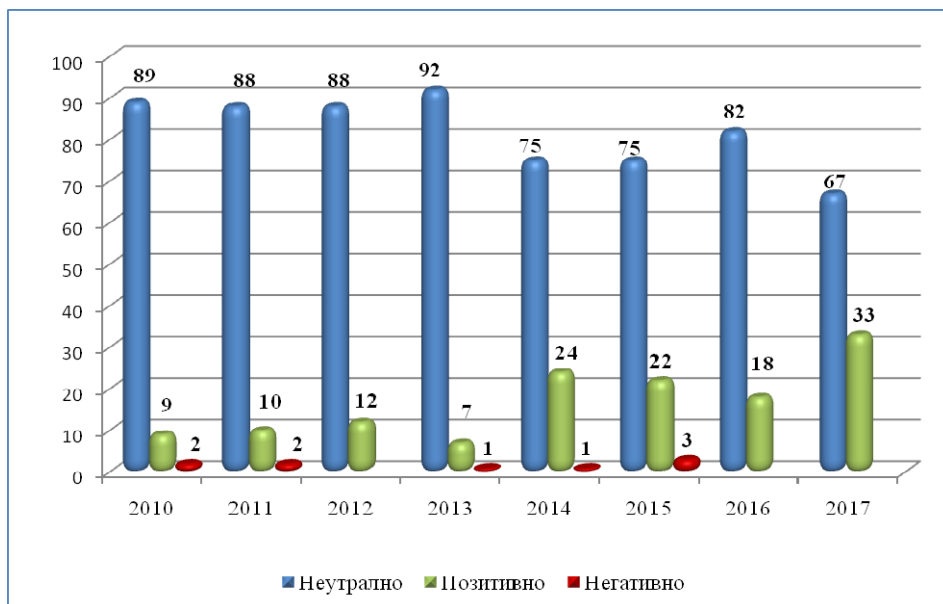


Graph 3 – Comparative review of number of reports in the press and on TV stations

When it comes to orientation of analyzed reports,<sup>13</sup> during the whole considered period there is distinct domination of reports with neutral value orientation (almost 90% in the first half). In relation to positively oriented reports it can be noticed that their presence in the second half of the analyzed period is much greater: from the average 9.5% (in the first half) to the increase to 24%. Negatively oriented reports are constantly at a very low level (from 1% to 3%).

<sup>12</sup> See Graph 3.

<sup>13</sup> See Graph 4.



Graph 4 – Orientation of analyzed reports (in percentage)

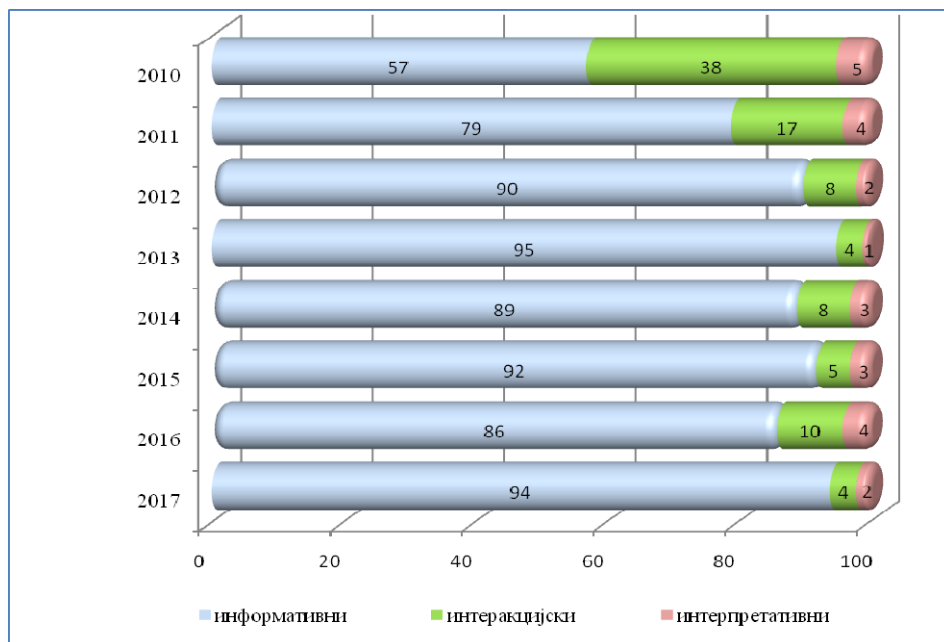
The belief that execution of the second mission of the Serbian Armed Forces is beneficial to foreign policy position of the country and its citizens has primarily affected the increase of reports with positive connotation in the second half of the considered period. In addition, rotations of the Serbian Armed Forces members in multinational operations became actually the usual activity in the second half of the period, which was mainly conducted without major problems. The similar reasons can also be used to explain rather low percentage of negatively oriented reports.

During the analysis of genre presence in the analyzed reports the following genre classification has been used: informative (news, reports, announcements), interactive (statements, interviews) and interpretative (review, comment, article). The obtained results point at very great presence of informative genre (85% on average), relatively small presence of interactive genre (excluding the first two years) and rather low presence of interpretative genre (in the range 1% - 5%).<sup>14</sup>

The data that more than 4/5 of the analyzed reports belongs to informative genre highlights the fact that media report on engagement of the Serbian Armed Forces members in multinational operations mainly factually, without assessment, relying primarily on agency news. This mainly means a chronological description of events without placing them in broader context.

<sup>14</sup> See Graph 5.



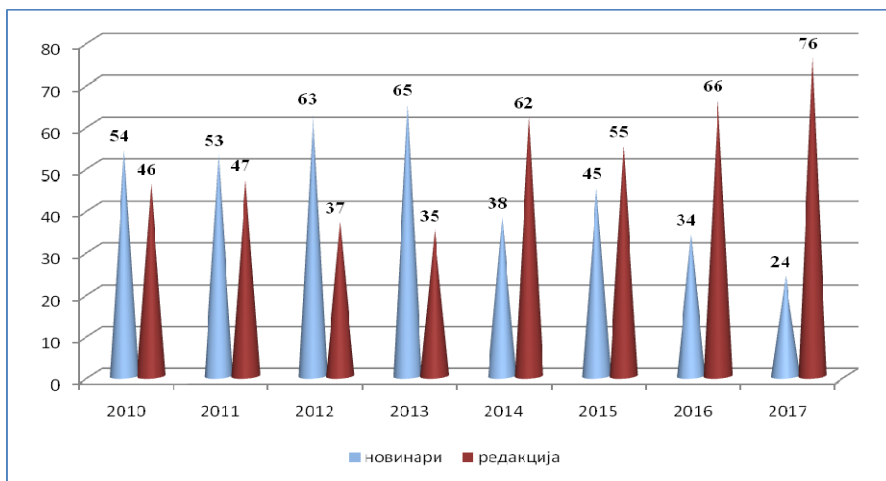


Graph 5 – Genre presence in percentage in the analyzed period

Excluding the first two years, when interactive genre was several times greater than in the later period, its presence is relatively modest – 6.5%. Moreover, during 2010 and 2011, after creating conditions for greater engagement of the Serbian Armed Forces members in execution of the second mission, there was the need to explain additionally the significance of those activities, a manner of their conduct, etc. Suspending the obligation of doing military service and transfer to the concept of the professional army have also given an additional impulse in such direction. After the initial period (in 2010 the share of interactive genre was 38%, and in 2011 - 17%), its presence decreased rapidly several times and it remained at average 6.5% until the end of the period.

Genre presence containing analytical elements with the possibility to express an attitude (review, comment, article) is at a rather low level – with slight oscillations during the analyzed period its share is from 1% to 5%. There are several reasons for such state, and some of them are: 1) general situation in media, which means fast and short information (usually with a statement by an official as a supplement to news), without review, comments, special TV shows as a more complex manner of considering certain issue; 2) media main interest in bad news; 3) journalists are often not experts in reporting on the activities of the Ministry of Defence and Serbian Armed Forces, thus basing their reports on agency news.

The analysis shows that in the first half of the period reports are mostly signed by journalists, and in the second half by news agency.<sup>15</sup> It is also obvious that the presence of news agency is increased (76% in 2017) whereas journalists are more rarely seen as authors of reports (24% in 2017). The reasons for such state are mainly mentioned in the previous considerations.



Graph 6 – Authors of analyzed reports – journalists or news agency (in percentage)

## Conclusion

The execution of the second mission of the Serbian Armed Forces in the function of meeting foreign policy objectives is a very important activity, having in mind the fact that the Republic of Serbia affirms cooperative security concept. In such context, guided primarily by its national interests and capacities, our country invests great efforts in order to contribute to keeping peace and stability in the world. During the last couple of years the expansion in this field has been obvious, both in terms of number of the engaged personnel and expansion of engagement framework – taking part in EU multinational operations.

By taking part in UN multinational operations the Serbian Armed Forces members continue the rich tradition based on participation of the Armed Forces of the Socialist Federal Republic of Yugoslavia in traditional peacekeeping missions of the world organization. In the period after the Cold War the international circumstances have, of course, changed, which undoubtedly affected changes in the character of UN peacekeeping missions (from classical monitoring a truce between conflicting parties to peace enforcement). By engagement in the missions established by adequate resolutions of the UN Security Council with clearly defined mission mandate, as well as precisely set tasks of its participants, the Serbian Armed Forces members give a maximum contribution in accordance with their capacities to keeping peace and stability in the world.

<sup>15</sup> See Graph 6.

Bearing in mind the fact that the EU membership is one of the priority foreign policy objectives of the Republic of Serbia, in recent years the Ministry of Defence and Serbian Armed Forces members have also participated in EU multinational operations. In order to create preconditions for engagement of the Serbian military representatives in operations and missions under the auspices of the EU, the adequate treaties have been previously signed. Thus, although it has the status of a candidate for admission, and not the EU full member, the Republic of Serbia expresses a commitment to give its contribution to the Common Foreign and Security Policy of the EU.

In relation to the execution of the second mission of the Serbian Armed Forces, the adequate normative-legal framework has been provided. In the period 2002-2009 undertaking activities in the mentioned field encountered numerous challenges including the lack of adequate legal regulation. After passing the set of doctrinal documents and legislation, participation of the Serbian Armed Forces members in UN and EU multinational operations has been regulated in detail. The foundation is provided in the Constitution, the National Security Strategy and the Defence Strategy of the Republic of Serbia that is in provisions of the Law on Defence and the Law on the Serbian Armed Forces, and most details are in the Law on engagement of the Serbian Armed Forces and other defence forces in multinational operations outside the Republic of Serbia borders (it stipulates, inter alia, types of peacekeeping operations in which the Serbian Armed Forces members can participate, then the process of decision-making at the state level in this field, as well as status, rights and obligations of the engaged Serbian Armed Forces members during their participation in missions).

Preconditions for successful execution of the second mission of the Serbian Armed Forces in the system have been created by numerous activities undertaken in different organizational structures of the Ministry of Defence and Serbian Armed Forces that is preconditions for greater participation of their personnel in UN and EU multinational operations have been fulfilled. The special importance among them has the Peacekeeping Operations Centre, which provides for the planned character of engagement of the Serbian Armed Forces members in multinational operations with maximum effort in terms of selection, training level, equipping of candidates and monitoring their engagement in missions. Furthermore, the training system has been modified and adapted to contemporary armies requirements, which enables easier reaching the necessary level of interoperability of potential participants in multinational operations (additional training is organized if necessary). In respect of the fact that foreign languages knowledge (mainly English) is one of important conditions for participation in missions, the Military Academy carries out continuous training of the Serbian Armed Forces members within STANAG programme for successful performance of tasks in multinational operations. Moreover, curricula from the field of social sciences at all levels of professional development of the Serbian Armed Forces members are a solid foundation for understanding events in the international community, considering and defining national interests, as well as importance of participation in multinational operations.

Among contributors (both at the world and European level) the Republic of Serbia takes a relatively high place by participating in six ongoing UN and four EU multinational operations. This is particularly important taking into account its geographical, demographic and economic indicators. The Serbian Armed Forces members have received official recognition several times from the mission management for the expressed professionalism and the

high training level in performance of tasks. In addition to praises, recognition has often been manifested by including them into higher levels of mission management.

Results of the mentioned research emphasize that Serbian media follow continuously participation of the Serbian Armed Forces members in UN and EU multinational operations. A relatively high level of media interest in the mentioned field is illustrated by the number of reports in the analyzed period: almost one report daily. However, in the analyzed period there is certain difference in the intensity of media reporting: during the first couple of years there were more reports because the topic was relatively new, and later participation of the Serbian Armed Forces members in multinational operations became an usual activity.

When it comes to orientation of analyzed reports, the situation is very favourable: neutral value orientation dominates with relatively high presence of positively oriented reports and almost negligible share of negative ones. The decisive influence on this is exerted by the belief that it is an usual activity (especially due to professionalization of the Armed Forces), which contributes greatly to achieving foreign policy objectives of the country.

Therefore, on the basis of the presented results of the research it can be concluded that the scope of publicity and value orientation of reports in relation to participation of the Serbian Armed Forces members in multinational operations are very good. However, it cannot be said so for certain characteristics of analyzed reports. The features of an “ordinary text” from the conducted research are: short form, unnoticeable headline, usually without announcement on the front page, often not signed by a journalist but by news agency, and a photograph that illustrates a text, which is a very expressive means, is not used enough.

The analysis of genre presence also brings us to the knowledge that in analyzed reports there is no critical relation to participation of the Serbian Armed Forces members in multinational operations, which could point to potential direction of the current situation enhancement. Besides that, in reviews, comments and articles it is necessary to put a topic that is considered in broader context, which would enable the public to find out something more about a mission the Armed Forces members are sent to (its mandate, experiences of its participants, etc.)

The reports on participation of the Serbian Armed Forces members in UN and EU multinational operations are primarily published in the periods of rotations (going to a mission and returning from it). Statements of officials dominate then and statistical data on number of missions, as well as number of the engaged Armed Forces members. Most media devote very little attention to the main characteristics of those missions – conditions and reasons for their establishment, tasks performed by their participants, the expected benefits for the Republic of Serbia, etc., and there are few reports on life and work of the Serbian Armed Forces members during their engagement in missions.

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# APPLICATION OF AHP METHOD IN SUPPORT OF DECISION-MAKING OF CIS SELECTION IN THE LAND FORCES OPERATIONS\*

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This paper describes application of AHP (Analytic Hierarchy Process) method as a method of multi-criteria decision-making in solving the problem of provision of the Communication and IT to the Land Forces in operations. Provision of the Communication and IT in operations is done by planning, organizing and using the adequate CIS (Communications and Information System).

This paper shows characteristics and capabilities of two CIS models. Besides definition of the problem, application procedure of AHP method has been described, selection criteria have been set and alternative models have been suggested. Expert Choice software package has been used in CIS model selection in the Land Forces operations.

*Key Words: multi-criteria optimization, AHP method, CIS, model, military operation*

## Introduction

The success of military organizational systems management is based on continuous decision-making. Almost by rule, the decisions which have been made, have got a greater effect on the system in the nearer and farther future than at present. A decision is made in order to meet certain requirements - goals that are set up in the considered problem. A problem is often characterized by a larger number of criteria (the functions of goals, criteria) for decision-making, more alternatives (solutions) for selection and selection process of a single final solution. In such cases application of the methods of operational research comes specially to the foreground because multi-criteria approach represents the only way to realistically describe each particular problem. Within multi-criteria optimization AHP method can be successfully applied. It belongs to the methods of multi-attribute decision-making.

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This paper has used AHP method for solving the problem of CIS model selection in the Land Forces operations. The suggestion of possible CIS models in the Land Forces operations has been made by the analysis of tactical and technical characteristics of communications devices and systems and their capabilities. The criteria for model selection in operations have been defined by expert questionnaire and comparison of models in relation to criteria and their evaluation has been done. The results obtained by application of AHP method represent the elements to the decision-maker for CIS model selection in the Land Forces operations. Expert Choice software package has been used as a solution to the problem.

## CIS models in the Land Forces operations

Characteristics of contemporary armed conflicts and military operations largely shape the manner of information usage. Information as a factor of an armed conflict is expressed like knowledge and needs for successful command at all levels. Processed and sent information in real time increases command efficiency, decreases duration of decision-making cycles at all levels and enables initiative and supremacy in an armed conflict. Linking all participants in military operations by electronic communications enables summary, delivery and display of relevant information. Thus, it is possible to create unique informational dimension of operational environment of military operations [1].

Provision of the Communication and IT in military operations is the process involving planning, organizing and using CIS for the sake of transmitting, protecting, electronic processing, storing and displaying information. Thereby, the necessary conditions for command functioning and management of engaged forces in military operations are created. Planning, organizing and using the Communication and IT provision contribute to finding a concrete CIS model, organizational structure is made and elements of a system in the area of an operation are placed in the technical and technological whole, communications and user services are maintained and used [2].

Therefore, the research of models of the Communication and IT provision in the Land Forces operations entails not only technological aspect of provision, but it has more radical purpose. To be more precise, analysis of the Communication and IT provision in combat operations can lead to CIS model of the Land Forces, which will enable efficiency and effectiveness of their functioning. This paper emphasizes shortly the characteristics of two possible CIS models in the Land Forces operations [3].

Model 1 is the integrated CIS according to the tactical study „Integrated signal system“ and Programme of equipping the mobile component of the Serbian Armed Forces system with the communications devices. The model includes access and infrastructure levels organized into the subsystems of radio communication and radio-relay communication (cable component is optional). The Communication and IT units at all levels of command (the mobile component of the integrated CIS) form nodes for all types of communications at the access level (the Communications Centre of a battalion – signal section, brigade – signal platoon and the Land Forces Command – 1-2 companies of a signal battalion) and they are linked to nodes at the infrastructure level – the stationary components of the integrated CIS (stationary communications node and stationary com-



munications centre). Radio communication is organized into networks according to command levels at a radio channel (the Land Forces – brigade, brigade – battalion and within a battalion) [4].

Radio-relay communication is organized into a ring structure linked to 2-3 stationary communications nodes and 2-3 stationary communications centres. Each access node of a battalion establishes two radio-relay directions up to 8Mb/s, that is the access node of a brigade and the Land Forces Command establishes three radio-relay directions up to 8Mb/s. Figure 1 shows an example of the possible topology of radio-relay network.

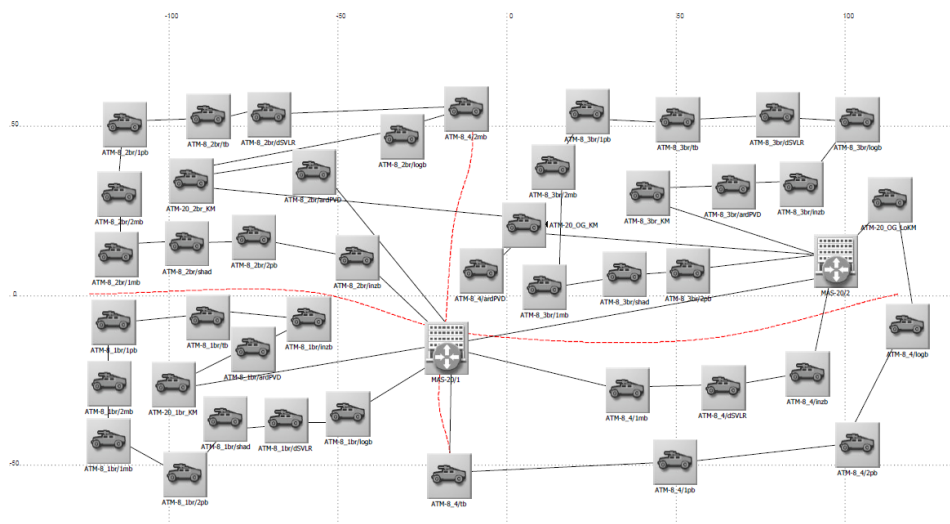


Figure 1 – Topology of CIS Model 1 (radio-relay communication subsystem)

Model 2 is a network concept, which represents a new type of the organizational CIS structure in the Land Forces operations. The network concept uses the same communications devices and it is organized into the subsystems of radio communication and radio-relay communication (cable component is optional). Radio communication subsystem is the basic CIS subsystem at a tactical level, and the only one in manoeuvre battalions.

A signal section of a battalion establishes exclusively radio communication at a battalion level and to a brigade level. Radio communication is organized into two networks at least with each participant from company to brigade (command network and data transmission network). At a brigade level concentration and integration of radio communication are carried out through access and network nodes of radio-relay communication subsystem (radio devices of high and very high frequency are integrated).

Radio-relay communication subsystem includes a network consisting of access and network nodes that are linked in a combined way (ring-star). Radio-relay communication subsystem is established by the Communication and IT units of brigades (signal companies) and the Land Forces (a company of a signal battalion). Having in mind that linking to the infrastructure level - stationary communications node is not necessary except pos-

sibly an access point for the Land Forces Command in the area of a defensive operation, the model enables mobility of forces and their deployment to any territory (without communications infrastructure). Radio-relay communication network in a brigade zone consists of three network nodes (each of them enables 4-6 radio-relay directions up to 8Mb/s for interconnection of network and access nodes) and six access nodes (each of them enables a radio-relay direction up to 8Mb/s for interconnection of battalions for support and a brigade). Network nodes are linked to the network nodes that are established in the Land Forces zones (a signal company of a signal battalion establishes them). Figure 2 shows the possible topology of radio-relay network [5].

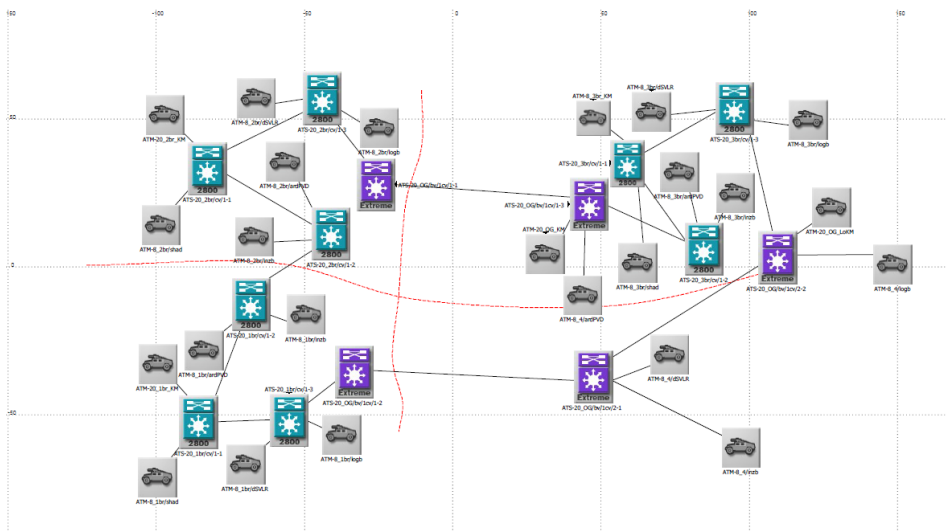


Figure 2 – Topology of CIS Model 2 (radio-relay communication subsystem)

The presented CIS models in the Land Forces operations represent two possible solutions characterized by certain features and capabilities of the system. Which of the mentioned models will function effectively in the Land Forces operations is the problem that should be solved by the method of multi-criteria decision-making.

## AHP method

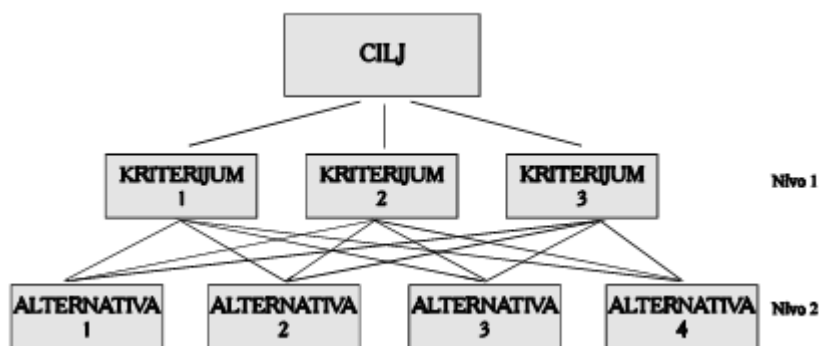
AHP is one of the most famous methods of scientific analysis of scenario and decision-making conducted by consistent evaluation of hierarchies, whose elements are goals, criteria, subcriteria and alternatives. The method was created by Thomas L. Saaty in 1980 [6] and it represents the tool that renders assistance to decision-makers in solving complex problems in decision-making.

AHP belongs to the class of soft optimization methods. Basically, it is a specific tool for forming and analyzing decision-making hierarchy. Firstly, AHP method enables interactive structuring of a problem hierarchy as preparation of decision-making scenario, and then it enables pairwise evaluation of hierarchy elements (goals, criteria and alternatives) in the top-down direction. Finally, synthesis of all evaluations is done and priorities for all hierarchy elements are defined according to a rigorous mathematical model. The sum of priorities at each level of a hierarchy equals 1, which allows the decision-maker to rank all elements in horizontal and vertical sense. AHP method enables interactive analysis of sensitivity of evaluation process to final ranks of hierarchy elements. Moreover, during evaluation of hierarchy elements until the end of the procedure and synthesis of results, consistency of decision-makers reasoning is checked and accuracy of obtained ranks of alternatives and criteria, as well as their priorities, is determined [7].

The validity of application of this method is seen in the existence of a greater number of criteria for CIS model selection, a greater number of suggested models, that is alternatives, simplicity and efficiency of application, as well as the original software developed for support to decision-making.

The method application is conducted in four phases [8]:

– problem structure, where it is necessary to decompose a problem, set a goal, criteria, subcriteria and alternatives. When it comes to methodological consideration, AHP method is a multi-criteria technique based on decomposing a complex problem into a hierarchy. A goal is at the top of a hierarchy whereas criteria, subcriteria and alternatives are at lower levels. As illustration, Picture 3 shows the hierarchy consisting of a goal, three criteria and four alternatives. A hierarchy does not have to be complete, for example, an element at some level does not have to be the criterion for all elements at a sub-level. Therefore, a hierarchy can be divided into subhierarchies that only have the top element in common;



Picture 3 – Hierarchy example in AHP method

– data collection and their measurement, where the decision-maker assigns relative weights to criteria comparing them two at a time by using Saaty's nine-point scale presented in Table 1. In the final step of this process the adequate matrix of criteria judgement is obtained;

Table 1 – Saaty's nine-point scale

Scale	Explanation/ranking
9	Absolutely strongly important/preferred
8	Very to absolutely strongly important/preferred
7	Very strongly to very important/preferred
6	Strongly to very strongly
5	Strongly more important/preferred
4	Moderately to more strongly
3	Moderately more important/preferred
2	Equally to moderately more important
1	Equally important/preferred
0,50	Equally important/preferred to slightly less important/preferred
0,33	Slightly less important/preferred
0,25	Slightly to strongly less important/preferred
0,20	Strongly less important/preferred
0,17	Strongly to very strongly less important/preferred
0,14	Very strongly less important/preferred
0,13	Very strongly to absolutely less important/preferred
0,11	Absolutely least important/preferred

– relative weight evaluation – the phase in which pairwise comparison matrix will „transfer“ into problems of own values determination in order to get the normalized and single eigen vectors, as well as the weight of all attribute on each hierarchy level;

– problem resolution, which involves the establishment of the so-called composite normalized vector. After the vector of criteria activity layout is established, it is necessary to determine alternative importance in the model, within each criterion. The weight of each criterion is multiplied by the weight of the reviewed criterion, and these values are then summarized for each alternative separately. The result is the weight of the reviewed alternative within the model. The weight of all of the rest alternatives is calculated in the same way. After that, the final ranking of alternatives in the model is determined.

Considering that the alternative comparison is based on a subjective estimation by the decision maker, it requires constant monitoring in order to secure the required accuracy [9]. This method ensures that the evaluation consistency is monitored constantly in the alternative pairwise comparison procedure. The consistency index:

$$CI = (\lambda_{\max} - n) / (n - 1) \tag{1}$$

where:

$\lambda_{\max}$  – is the matrix Eigen value;

$n$  – is the matrix size

calculates the consistency ratio (CR)

$$CR = CI / RI, \tag{2}$$

where  $RI$  is the random consistency index ( $n$  size matrix consistency index of randomly generated pairwise comparison), for which Table 2 is used (with calculated values).

Table 2 – Random consistency index values

n	1	2	3	4	5	6	7	8	9	10
RI	0	0	0,52	0,89	1,11	1,25	1,35	1,40	1,45	1,49

$\lambda_{\max}$  is the matrix Eigen value, whereas  $n$  is the matrix size. Thereto, it is true that  $\lambda \geq n$ , and the difference  $\lambda_{\max} - n$  is used to measure the evaluation consistency. In case of inconsistency, if  $\lambda_{\max}$  is closer to  $n$ , the evaluation is more consistent. If  $CR \leq 0,10$ , the calculation of relative criteria importance (alternative priority) is considered acceptable [10].

## CIS model selection

The function of a goal is defined by CIS model selection in the Land Forces operations. More efficient application of AHP method in a concrete case is enabled by use of the developed original software package Expert Choice from the class of decision-making support systems [11].

This paper describes two CIS models and they include alternatives:

A1 – Alternative 1 (Model 1);

A2 – Alternative 2 (Model 2).

Model selection will be done according to the set criteria:

K1 – Optimal resource engagement including minimum costs (efficiency);

K2 – Simple CIS structure;

K3 – CIS autonomy (independence from the stationary component or other communications device);

K4 – Ability to adapt to changes – mobility;

K5 – CIS capacities (number of simultaneous links, capacity and service availability);

K6 – CIS command and control ( $C^2$ );

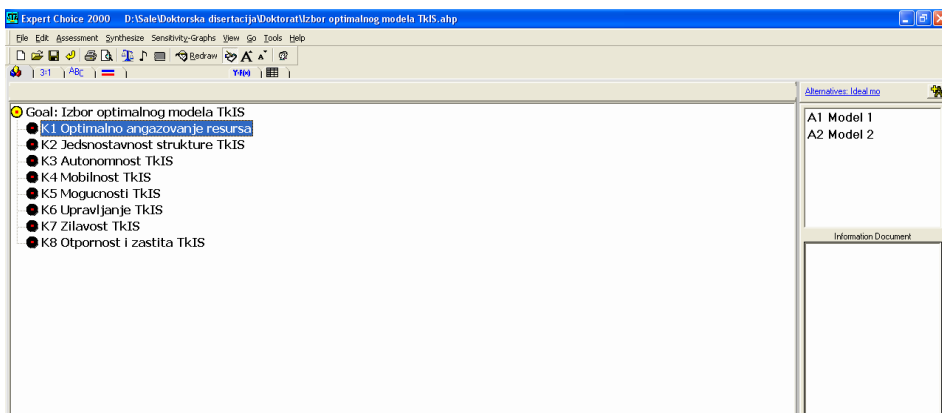
K7 – Signal strength (continuity in communications);

K8 – CIS resistance and protection.

The presented criteria for model selection are set on the basis of the questionnaire done by competent personnel (experts<sup>1</sup>), and they are the result of knowledge, experience and resolution of the Communication and IT provision through complex operational tasks. A problem structure is shown in Graph 4.

<sup>1</sup> The experts, who have taken part in criteria selection are competent persons attending professional development for heads of the Communication units in battalions and brigades, company commanders and signal battalion commanding officers.

## Application of AHP method in support of decision-making of CIS selection in the Land Forces operations



Graph 4 – Criteria and alternatives for model selection

Relative weights have been assigned to criteria by pairwise comparison done according to nine-point scale presented in Table 1. Processing data from the expert questionnaire has led to data on relative criteria weights.<sup>2</sup>

Picture 5 shows the procedure in software package Expert Choice.

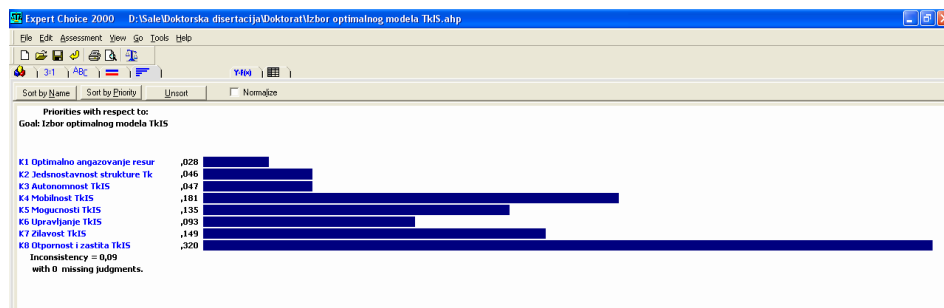
	K1 Optimalno angazovanje resursa	K2 Jednostavnost strukture TkIS
K1 Optimalno angazovanje resursa	1,0	3,0
K2 Jednostavnost strukture TkIS	0,33	1,0
Incon: 0,09		

Picture 5 – Criteria evaluation matrix

From Picture 5 one could conclude that  $CR = 0,09 \leq 0,1$ , which is considered to be within the limits of the allowed.

Picture 6 presents priority importance in comparison with the set goal.

<sup>2</sup> The instrument that has been used for expert evaluation is the questionnaire.



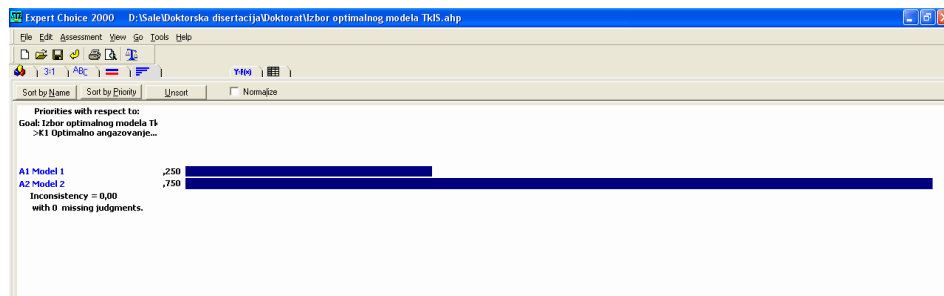
Picture 6 – Matrix of criteria importance in comparison with the set goal

The next step is alternative – model comparison for each set criteria separately. The comparison has been done on the basis of the conducted questionnaire with competent personnel (experts) according to nine-point scale presented in Table 1. The questionnaire results are presented in Table 3.

Table 3 – Questionnaire results of criteria comparison for given alternatives

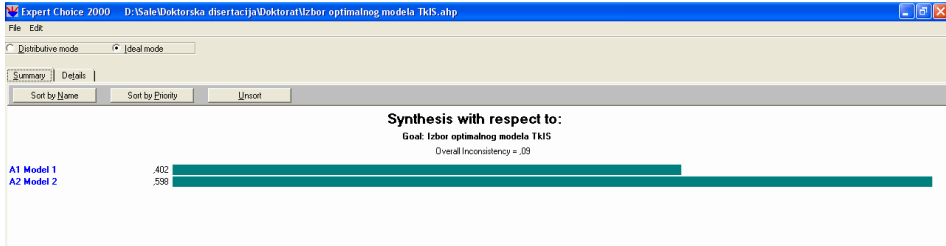
Criterion/alternative	Alternative 1 (Model 1)	Alternative 2 (Model 2)
K1 – Optimal resource engagement including minimum costs (efficiency)	-	3
K2 – Simple CIS structure	3	-
K3 – CIS autonomy (independence from the stationary component or other communications device)	-	5
K4 – Ability to adapt to changes – mobility	-	5
K5 – CIS capacities (number of simultaneous links, capacity and service availability)	3	-
K6 – CIS command and control (C <sup>2</sup> )	-	3
K7 – Signal strength (continuity in communications)	3	-
K8 – CIS resistance and protection	-	3

Picture 7 presents alternative comparison for criterion K1.



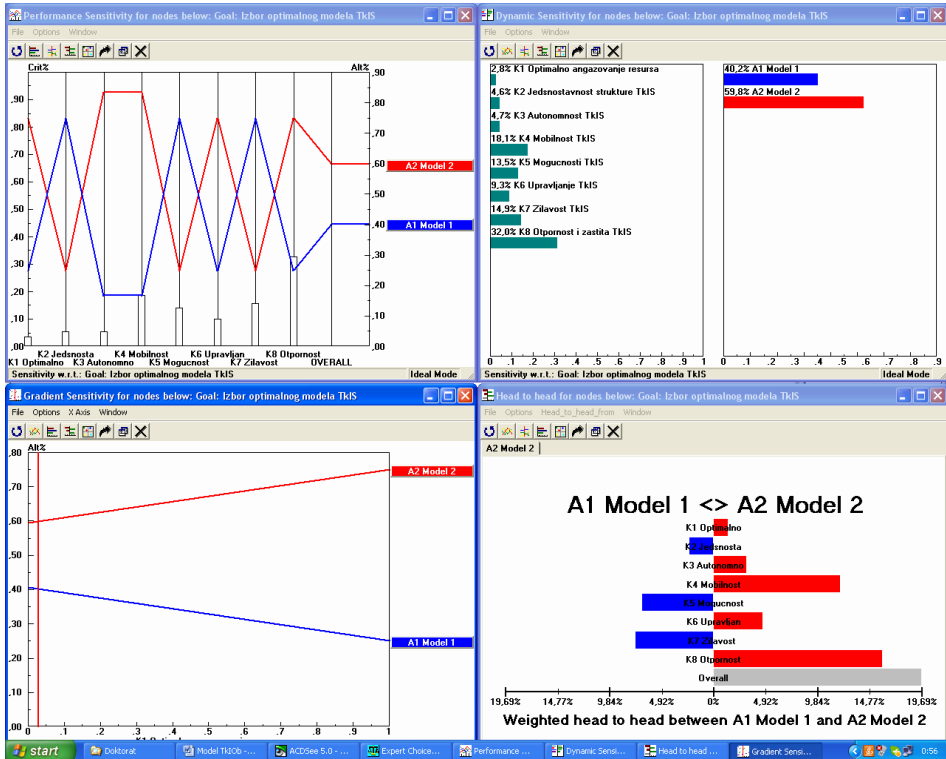
Picture 7 – Alternative comparison for criterion K1

In the final step of this process the synthesis of the problem of CIS model selection in the Land Forces operations has been conducted and the obtained results have been summarized. Alternative 2 (Model 2), which has received a greater value is the solution of the problem. The final procedure of AHP method application is shown in Picture 8.



Picture 8 – Matrix of alternative importance in comparison with the set goal

Picture 9 shows comparative graphs of criteria and alternative importance in the analyzed model.



Picture 9 – Comparative graphs of criteria and alternative importance



These graphs show sensitivity performance of the suggested alternatives in comparison with criteria for model selection, dynamic sensitivity with the values of own criteria and alternatives vectors, gradient alternative sensitivity and graph weight of the alternatives A1 and A2, which are in the foreground according to the set criteria. Besides its simplicity, the software solution is very practical and efficient when changing criteria or judging alternatives, that is during analysis of different approach to solving a problem.

## Conclusion

Two CIS models have been created by the analysis of provision of the Communication and IT to the Land Forces, particularly CIS organization in operations and application of the complex of scientific methods. The main model has been made on the basis of the tactical study related to the equipping of the Serbian Armed Forces with integrated CIS whereas the network model is modification – specific organization of CIS carried out with the same Communication and IT devices. Both models have been used with radio communication and radio-relay communication subsystems and they are characterized by specific features from the aspect of the used Communication and IT devices and systems, the way of organization, capabilities of the Communication and IT capacities and services, mobility, simplicity of the structure, etc.

AHP method as one of the methods of multi-criteria optimization in solving the problem of CIS model selection in the Land Forces operations has been applied in this paper. In addition to definition of the problem, criteria and alternatives, the method application has been described. The model that represents an optimal solution for the set criteria has been selected by expert choice and evaluation of the set criteria, the comparison of created models (alternatives) and use of software package Expert Choice.

It can be concluded that considering the concrete problem two criteria are preferred – CIS resistance and mobility. The software solution turned out to be very practical and efficient when searching for an optimal solution, that is analysis of different approach to solving a problem. The selected CIS model would render an adequate basis for provision of the Communication and IT to the Land Forces in operations.

In the context of support to decision-making, by AHP application the solution was found including the network model, which would meet all significant elements of efficient and effective functioning in the Land Forces operations. One should have in mind that the tool offers only a possible solution, but the final decision is made by the decision-maker, who remains the key factor in solving the functioning of the Communication and IT provision in operations.

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# IMPLEMENTATION OF GEOGRAPHIC INFORMATION SYSTEM IN MILITARY TERRAIN ASSESSMENT

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Geographic Information System<sup>1</sup> has made a great leap in the last two decades. On the one hand, it becomes widely used in various fields of the society. On the other hand, terrain plays significant role in the military activities of all kinds. It must be accounted for during planning and preparation of military operations. This article explores application of GIS in military terrain assessment. The proper Intelligence Preparation of the Battle space<sup>2</sup> in the real situation would require taking into consideration many factors including terrain, weather, population, enemy, etc. However, the focus of this work is on plain terrain analysis with the aim to examine one. For this purpose, a Model in ArcGIS Desktop Model Builder has been made, which results in raster showing several classes of terrain. The method used in the analysis is a Weighted Suitability Analysis<sup>3</sup>. The results of WSA indicate that the terrain in the area of interest is favorable for movement of up to one mechanized division. Definition and classification to define terms and recognized interaction among them has been used.

Key Words: *GIS, ArcGIS, terrain analysis, IPB, military application*

## Introduction

Terrain analysis is of crucial importance for success on the battlefield. The knowledge of enemy's doctrine, Tactics, Techniques and Procedures<sup>4</sup> and capabilities complemented by adequate terrain assessment is a precognition for recognizing its intentions in the area. In the US Army Field Manual 34-130 Intelligence Preparation of the Battlefield<sup>5</sup> it is recommended that these factors should be considered during terrain analysis: Cross-country mobility; Transportation systems (road and bridge information); Vegetation type and distribution; Surface drainage and configuration; Surface materials (soils); Ground water; and Obstacles.

<sup>1</sup> The abbreviation GIS will be used further in the text.

<sup>2</sup> The abbreviation IPB will be used further in the text.

<sup>3</sup> The abbreviation WSA will be used further in the text.

<sup>4</sup> The abbreviation TTPs will be used further in the text.

<sup>5</sup> Field Manual 34-130, "Intelligence Preparation of the Battlefield", Department of the Army, Washington DC, 1994, p. 2-9.

Analysis of military aspects of terrain in staff work has been done manually until recently. The development of different GIS software has enabled its military application. There are several tools for military use developed by Esri, which are based on ArcGIS software. In this project ArcGIS Desktop 10.3.1. with a Student Advanced License has been used. The model which processes data and analyze(s) terrain has been built in the ArcGIS Desktop Model Builder. The model includes all abovementioned factors, it converts features into raster and as a result it calculates suitability of terrain for movement of mechanized units.

During preparation of data the appropriate value has been assigned to each data set with regard to its negative or positive influence on the movement of troops across the terrain. The military classification has been used including:

- "Unrestricted" – terrain does not hamper the movement of units (no steep slopes, land type favors units movement, no forests, etc.),

- "Restricted" – terrain moderately hampers the movement of units, it canalizes its movement through corridors, units have to avoid obstacles, etc.,

- "Severely Restricted" – terrain significantly hampers the movement of units, making it impassable without great effort, use of special equipment and great loss of time.

Those values are in the range from one to three respectively (1 – does not restrict movement significantly, 2 – restricts movement significantly and 3 – severely restricts movement making it impassable without special equipment) for negative influence features, and values of -1 or -2 for features that enhance mobility. To be more precise, if there is a forest the value of 3 has been assigned to it because it hampers the movement of units, particularly motorized, or, on the other hand, if there is a road the value of -1 or -2 has been assigned to it because it has positive influence on the movement of units. All but DEM layer has originally been polygon or line feature. Those layers have to be converted to raster and afterwards Raster Calculator has to be used to replace Null values with zeros.

The last step in the Model that has been made is WSA. The "relative importance" has been assigned to all layers based on an analyst personal opinion. This part of analysis depends largely on the experience of an analyst and their military knowledge.

## GIS in Military Terrain Assessment

The rapid development of Information Technology in the last quarter of 20<sup>th</sup> and the first quarter of 21<sup>st</sup> century has led to the increased implementation of GIS Technology in the armies of the developed countries. To understand how GIS can be utilized in IPB process and, more precisely, in the terrain assessment, it has to be defined what GIS and Military Terrain Assessment actually are.

### *Geographic Information System*

From the ancient times, terrain has played major role in various human activities. People live in space and they are surrounded with different things in space. It is the factor which has influenced human behavior and which has to be accounted for when making decisions on where to build a settlement, where to cross the river, or, in the military sense, what the best place for engaging enemy is.

In some sense, the roots of GIS can be found in the process of making static paper maps. The process itself was slow and hard, requiring collection of spatial information "on foot" and drawing different layers one on the top of the other manually. In the beginning, the main function of collection of spatial data was actually to show where things are and how they are located in relation to each other. This is called cartography.

However, apart from cartography function, the significant part of modern GIS is spatial analysis capability. In relation to this, the first recorded and maybe the most known example of spatial analysis is the case of John Snow's London cholera analysis. John Snow was an English physician famous for his analysis of cholera outbreak in London in 1854. He used a simple map with streets of London and water pump locations. He put all the cholera cases on the map and as a result he concluded that most of the cases were in the vicinity of one of water pumps. On the basis of this, he concluded that the pump was source of disease. When people stopped taking water from that pump, the disease slowly ended.

This example, despite being done using primitive means, shows the way how spatial analysis, in this case overlay of different layers, could contribute in solving real life problems. Today, there are numbers of spatial analysis techniques. Seven basic spatial analysis techniques are: Selection, Buffering, Dissolve, Overlay Operations, Classification, Table Operations and Geocoding<sup>6</sup>. We will not discuss these techniques in depth in this article; however, it is important to stress the importance of GIS and its wide spectra of application in various fields of the modern world.

Still, we cannot speak of GIS until modern computers appeared in the mid-20<sup>th</sup> century. The development of modern computer devices and specially their availability to a wide auditorium of users enabled the birth and evolution of GIS. Today, the world would hardly be imaginable without GIS; think of software applications such as Google maps, Open Street Maps, different types of applications for navigation, all the way to professional proprietary GIS software such as ArcGIS, or the free ones such as QGIS.

There are many definitions of GIS but, basically, it is "an organized system of hardware, software, data, trained personnel and network with the aim to effectively collect, store, update, manage, analyze, model, transfer and display all types of spatial information".<sup>7</sup>

It is useful to view GIS as a process rather than a thing.<sup>8</sup> It is a combination of:

- a. Hardware – refers to all necessary equipment for GIS use such as computers, plotters, digitizers, etc.
- b. GIS software – enables manipulation of spatial data depending on its capabilities, e.g. spatial analysis, cartography, routing, etc.
- c. Spatial data – refers to any data which has spatial component. According to some sources, 80% of all data has been somehow spatially determined.
- d. Trained personnel – makes crucial part of GIS. The more trained users the more benefit they will be able to gain from the system.
- e. Lastly, there is a network – which can be seen as computer network (e.g. Internet) and people network.

<sup>6</sup> CN-1681-INTRO-QGIS, "Introduction to Geospatial Technology Using QGIS", Canvas MOOC, 2015.

<sup>7</sup> Verka Jovanović, "Geografski informacioni sistemi, Prvo izdanje", Univerzitet Singidunum Beograd i Univerzitet u Novom Sadu, Beograd, 2012, p. 11.

<sup>8</sup> Script, "Reference systems and cartographic representations", Geo Cell, EUFOR, 2008, p. 26.

GIS has found its application in many fields, e.g. urban planning, agronomy, transportation, education, navigation, etc. GIS can aid and make easier the execution of military tasks. It can be used to produce terrain analysis products such as: modified combined obstacle overlays, hydrology overlays, slope maps, on and off road mobility maps, line-of-sight plots, concealment maps, possible problems associated with lines of communications, etc.<sup>9</sup>

Every GIS contains subsystems for:

- data input,
- data storage, retrieval and representation,
- data management, transformation and analysis,
- data reporting and product generation.<sup>10</sup>

The company with greatest share in the market concerning GIS technology is Esri. Its ArcGIS product has set standards and is regarded as one of the best proprietary software in the field. The system provides infrastructure for making maps and geographic information available throughout an organization, across a community, and openly on the Web.<sup>11</sup> ArcGIS Desktop, which has been used in this project, has several parts such as ArcMap, ArcCatalog, ArcScene, ArcGlobe, etc. There are three functionality levels, which depend on available licenses:

- ArcGIS for Desktop Basic, which allows one to view spatial data, create layered maps, and perform basic spatial analysis;
- ArcGIS for Desktop Standard, which in addition to the functionality of Basic, includes more advanced tools for manipulation of shape files and geo-data bases;
- ArcGIS for Desktop Advanced, which includes capabilities for data manipulation, editing, and analysis.<sup>12</sup>

## Mission Terrain Analysis

### *Terms*

All the most important military theorists of the world have written about the significance of the terrain during the warfare. A terrain analysis in war theory literature occupies a very important place.

Sun Tzu, famous Chinese war theorist, recognized five factors of war. Among moral, weather, command and doctrine, on the third place we could find terrain. He states: "By terrain I mean distances, whether the ground is traversed with ease or difficulty, whether it is open or constricted, and the chances of life or death".<sup>13</sup> Also, he wrote a chapter about terrain consideration.

Carl von Clausewitz in his work "On War" considers three properties through which the ground has an influence on action in war; that is, as presenting an obstacle to approach, as an obstacle to an extensive view, and as protection against the effect of fire-arms; all other

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<sup>9</sup> Ibid.

<sup>10</sup> Ibid.

<sup>11</sup> [https://en.wikipedia.org/wiki/ArcGIS#cite\\_note-65](https://en.wikipedia.org/wiki/ArcGIS#cite_note-65), accessed on 13th June 2017. at 11:39 CEST.

<sup>12</sup> [https://en.wikipedia.org/wiki/ArcGIS#cite\\_note-65](https://en.wikipedia.org/wiki/ArcGIS#cite_note-65), accessed on 13th June 2017. at 11:50 CEST.

<sup>13</sup> Sun Tzu, "The Art of War", Oxford University Press, New York and Oxford, p.64.

effects may be traced back to these three. He further says: "each of these three kinds of ground in proportion as its own special peculiarity has a tendency to an extreme, has in the same degree a tendency to lower the influence of the supreme command, increasing in like manner the independent action of subordinates down to the private soldier".<sup>14</sup> Also, he distinguishes three types of terrain: level plain country, thickly-wooded country and mountains. It was found out that each of these three kinds of ground has an effect in its own way on movement, the range of sight, and the cover it affords.

Frederick II the Great in his "Universal War Principles – Instructions to generals"<sup>15</sup> emphasizes: "For a general, the knowledge of land is the same as a gun to an infantry soldier or an arithmetic rule to a mathematician. If he does not know the land, all the time he will make gross mistakes."<sup>16</sup> He continued: "Without this knowledge, a commander's plans become ridiculous and unfeasible". Therefore, Frederick II warns: "Study the land on which you will act!"<sup>17</sup>

Terrain is usually defined as a stretch of land, especially with regard to its physical features.<sup>18</sup> Also, it is described as a geographic area or a piece of land<sup>19</sup>. Finally, terrain is exemplified as a tract of land, especially considered with reference to its natural features, military advantages, etc.<sup>20</sup> The origin of term *terrain* is from French, actually from a popular Latin variant of Latin *terrenum*, *terra* which means *earth*, and dates to the early 18th century. In some way the synonyms in the English language are ground or field. However, in the military sense there are differences. A field is defined as "area where a battle or other military operation takes place".<sup>21</sup> It is the synonym to the term battlefield – "the ground on which a battle is fought".<sup>22</sup> Also, in recent years the term *battlespace* is in use in military terminology. It is defined as "The environment, factors, and conditions that must be understood to successfully apply combat power, protect the force, or complete the mission. This includes air, land, sea, space, and the included enemy and friendly forces; facilities; weather; terrain; the electromagnetic spectrum; and the information environment within the operational areas and areas of interest".<sup>23</sup>

## Terrain analysis process

Proper terrain analysis is as essential to success on the battlefield today as it was during the ancient and medieval times. The knowledge of the environment is a precondition for making a good decision during a war. Throughout Military Decision Making Proc-

<sup>14</sup> Carl von Clausewitz, "On War", trans. COL James John Graham, N. Trübner, London 1873, Book 5, Chapter 17 On Country and Ground.

<sup>15</sup> Original title: "Fridrich II der Grosse, Les Principes Generaux de la Guerre"

<sup>16</sup> Group of authors, "Rasprave o ratnoj veštini", VINC, Beograd, 1991, p. 291.

<sup>17</sup> Ibid.

<sup>18</sup> <https://en.oxforddictionaries.com/definition/terrain>, accessed on 27th June 2017.

<sup>19</sup> <https://www.merriam-webster.com/dictionary/terrain>, accessed on 27th June 2017.

<sup>20</sup> <http://www.dictionary.com/browse/terrain>, accessed on 27th June 2017.

<sup>21</sup> Richard Bowyer, "Dictionary of Military Terms", third edition, A&C Black, London, p.93.

<sup>22</sup> Richard Bowyer, "Dictionary of Military Terms", third edition, A&C Black, London, p.25.

<sup>23</sup> FM 1-02, "Operational Terms and Graphics", Headquarters Department of the Army, Washington DC, 2004, p. 1-21.

ess,<sup>24</sup> intelligence elements have the task to collect and disseminate relevant products (data, information and intelligence) about environment to decision makers at all levels of command and control. Due to this, they complete intelligence preparation of the battlefield or battlespace<sup>25</sup> to fill "intelligence gaps" of decision makers. IPB is "a systematic process of analyzing and visualizing the portions of the mission variables of threat or adversary, terrain, weather, and civil considerations in a specific area of interest and for a specific mission".<sup>26</sup> As it is known, an IPB process consists of four steps: Define the operational environment; Describe environmental effects on operations; Evaluate the threat/adversary; and Determine threat/adversary courses of action.

In the second step of IPB, "Describe environmental effects on operations", intelligence officers have to evaluate how the environment/battlespace area of interest affects and influences both threat/adversary and friendly operations. The aim of the process is that decision-makers understand advantages and disadvantages of threat or adversary, terrain, weather and other factors and exploit them in a correct way to achieve success.

In this paper, only a terrain analysis will be considered. It is defined as "the study and interpretation of natural and man-made features of an area, their effects on military operations, and the effects of weather and climate on these features".<sup>27</sup>

During analysis of terrain, there are some guidelines we should follow:

- Due to changes in terrain, we have to update our analysis. Thus, terrain analysis is a continuous process.

- The study of a map or image should not be the only source for analysis. Indeed, it will help to identify gaps in knowledge of terrain.

- Terrain analysis should be based on reconnaissance of the area of operations and area of interest. This largely depends on the available time.

According to FM 2-01.3,<sup>28</sup> conclusions about the effects of terrain are reached through two sub steps:

- Analyze the military aspects of terrain.

- Evaluate terrain's effect on military operations.

After identifying area of operations and area of interest, a terrain analysis mainly focuses on the military aspects of terrain. It consists of: observation and fields of fire, avenues of approach, key and decisive terrain,<sup>29</sup> obstacles, and cover and concealment<sup>30</sup>. These are general guidelines when analyzing and defining the battlefield rather than strict ones. Also, the influence and effects of weather on terrain have to be considered if we want an excellent conclusion about terrain.

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<sup>24</sup> Hereinafter abbreviated MDMP.

<sup>25</sup> Hereinafter abbreviated IPB.

<sup>26</sup> FM 2-01.3, MCRP 2-3A, "Intelligence Preparation of the Battlefield/Battlespace", Headquarters Department of the Army, Washington DC, October 2009, p. 1-1.

<sup>27</sup> FM 34-3, "Intelligence Analysis", Headquarters Department of the Army, Washington DC, July 2009, p. 3-14.

<sup>28</sup> FM 2-01.3, MCRP 2-3A, "Intelligence Preparation of the Battlefield/Battlespace", *Headquarters Department of the Army*, Washington DC, October 2009, p. 3-3.

<sup>29</sup> Key Terrain: „Any location or area which the seizure, retention or control of affords a marked advantage to either combatant.“ Decisive Terrain: „Key terrain which the seizure, retention or control of is necessary for mission accomplishment.“ <https://www.flashcardmachine.com/maneuver-captains-course.html>, accessed on 6th July 2017. at 10:45 CEST.

<sup>30</sup> Hereinafter abbreviated OAKOC.



After this, an intelligence analyst has to consider terrain's effects on available threat/adversary COAs and friendly forces COAs. They have to focus on the military aspects of terrain in great detail. "There are four basic techniques to evaluate terrain's effects on COAs: Concentric ring, Belt, Avenue in depth and Box."<sup>31</sup>

It could be concluded that a terrain analysis is continuous process and very important part of IPB and MDMP.

### *Terrain analysis importance*

Staff planners, who realize the importance of a terrain analysis and are equipped with the proper tools, are key planners of a successful operation. If they are skilled at their tasks, they can fully determine limitations and possibilities in an area of operations. For instance, an attack will be directed toward areas where the enemy is the weakest and where terrain favors strengths of its own forces the most. According to the needs in a battlespace, most staff planners at a brigade level and below, particularly an intelligence officer, assistant brigade engineer and task force engineer, realize the significant role they have in conducting terrain analysis tasks in support of operations planning. Contemporary planners use modern automated tools and equipment to carry out very detailed analyses of terrain and weather. The utility and availability of these tools continue to increase, and they provide timely support to planners.

The geospatial engineer elements and teams provide support to the G-2/S-2, and also the direct support to a unit. Nowadays, computers and programs enable generation of a terrain model and its display into two-dimensional or three-dimensional view. Of course, leaders and commandants should always carry out a physical reconnaissance of terrain when it is possible.

## Methods

The main method that has been used in the project is Weighted Suitability Analysis. As a guide for this project the US Army FM 2-01.3 has been used. Terrain analysis has been a part of Intelligence Preparation of Battlefield process. The factors that should be considered are:

- Cross-country mobility,
- Transportation systems (road and bridge information),
- Vegetation type and distribution,
- Surface drainage and configuration,
- Surface materials (soils),
- Ground water,
- Obstacles.

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<sup>31</sup> FM 2-01.3, MCRP 2-3A, "Intelligence Preparation of the Battlefield/Battlespace", *Headquarters Department of the Army*, Washington DC, October 2009, p. 3-8.

The data, which has been used for the project was downloaded from the Internet. It has been decided to use open source data with the aim to demonstrate an approach of using GIS for military purpose wittingly, disregarding reliability and accuracy of data. A data set has been downloaded as follows:

- Roads – line features,
- Railroads – line features,
- Small rivers – line features,
- Major rivers – polygon features,
- Forests – polygon features,
- Land use – polygon features,
- Lakes – polygon features,
- Swamps – polygon features,
- Built - up areas – polygon features, and
- DEM – raster.

In addition to the abovementioned data sets, the authors considered some other data such as airports, power lines, etc. which would be important for assessing an area of operations in reality. However, it has been decided to stick to the abovementioned just to keep the project feasible in the given time and space.

After obtaining the data, the authors have examined all the data and found out what it consists of. Some pre-processing and adjustment of the data had to be done in order to allow the use of the data for the specific purpose of this project. The field „weight“ has been added into attribute tables of each feature of a data set and it has been filled in accordance with the way they influence movement in the area. For example, obstacles such as Forests, Lakes, Major Rivers, Swamps, etc. have been weighted as value of 3 (it hampers movement significantly); Small Rivers have been weighted as value of 2 (they hamper movement moderately) and Roads and Railways have been weighted as value of 1 or 2 (they enhance mobility).

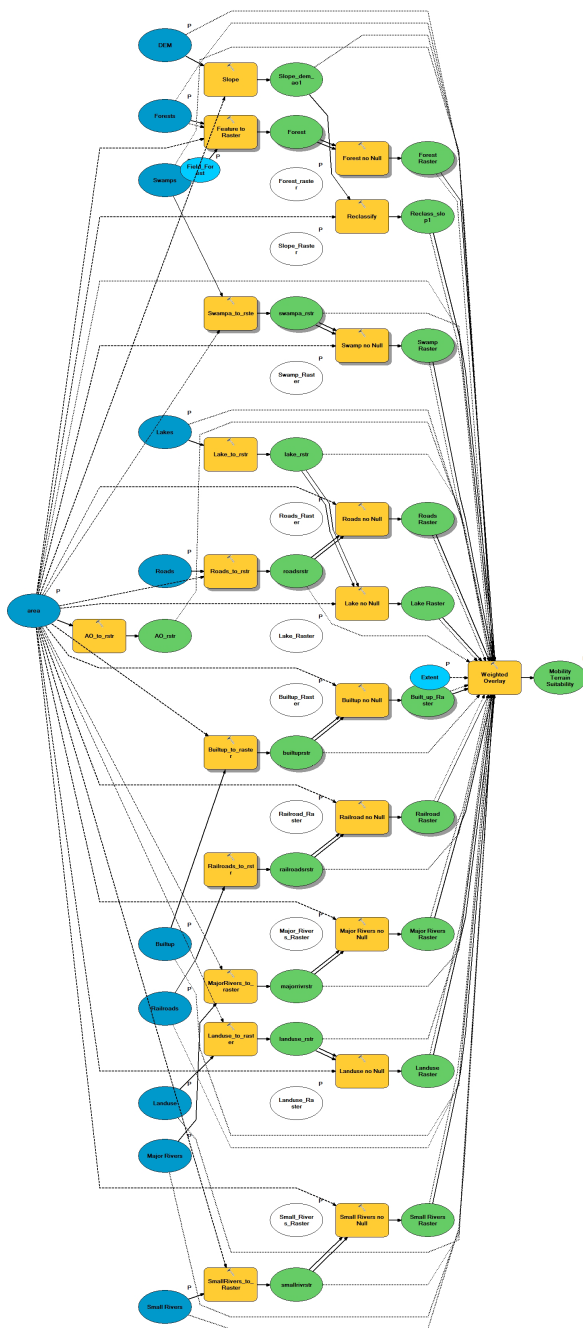
The authors have decided to do Suitability Analysis and make a Model including all abovementioned data. Firstly, all feature layers had to be converted to raster in order to allow their use in the tool Weighted Overlay. In order to avoid Null values, all of them were converted into zeros. Secondly, DEM has been used to calculate slopes. Slope layer has been taken and reclassified as follows:

- < 30 - unrestricted,
- 30-45 - restricted, and
- >45 severely restricted terrain.<sup>32</sup>

When it comes to the last step in the process, which is Weighted Analysis, the authors had to rely on the US Army FM 2-01.3., and their personal judgment to decide what importance each of the abovementioned factors has on the movement of mechanized units.

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<sup>32</sup> Numbers represent slope in percent.



Legend:

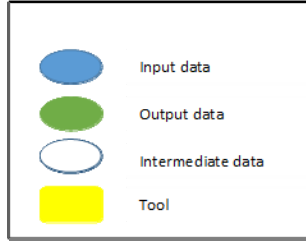


Fig. 1 – Model Builder Scheme

When deciding how to measure influence of each of the factors, a number of features have been taken into consideration in this particular area (for example, there are not too many lakes and therefore we consider them moderately important). The values in the weighted overlay table from the tool can be seen below.

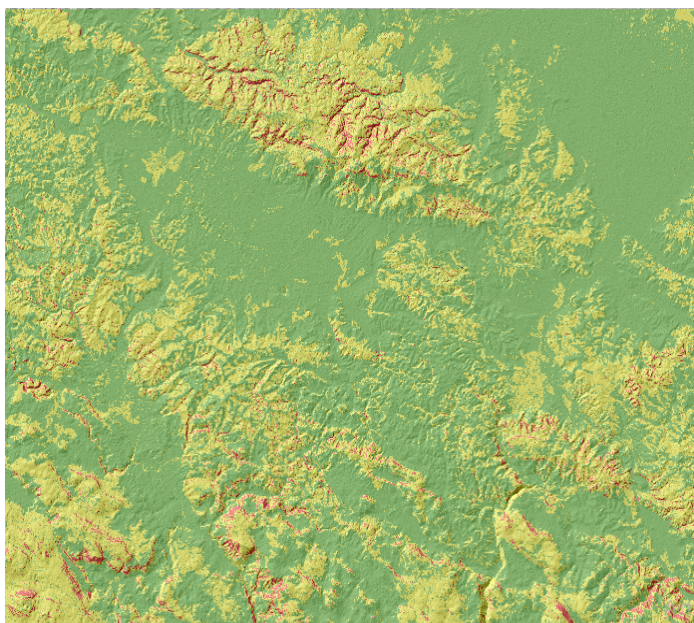
Table 1 – Weighted overlay table

Raster	Influence%	Field	Scale value
Reclassified Slope Raster	20	1	5
		2	3
		3	1
		NODATA	NODATA
Major Rivers Raster	10	0	5
		3	1
		NODATA	NODATA
Small Rivers Raster	5	0	5
		2	3
		3	1
		NODATA	NODATA
Forest Raster	10	0	5
		3	1
		NODATA	NODATA
Roads Raster	20	-2	5
		-1	5
		0	1
		NODATA	NODATA
Lake Raster	5	0	5
		3	1
		NODATA	NODATA
Swamp Raster	5	0	5
		3	1
		NODATA	NODATA

Raster	Influence%	Field	Scale value
Railroad Raster	5	-1	5
		0	1
		NODATA	NODATA
Built up Raster	10	0	5
		3	1
		NODATA	NODATA
Land use Raster	10	0	5
		1	5
		2	3
		3	1
		NODATA	NODATA

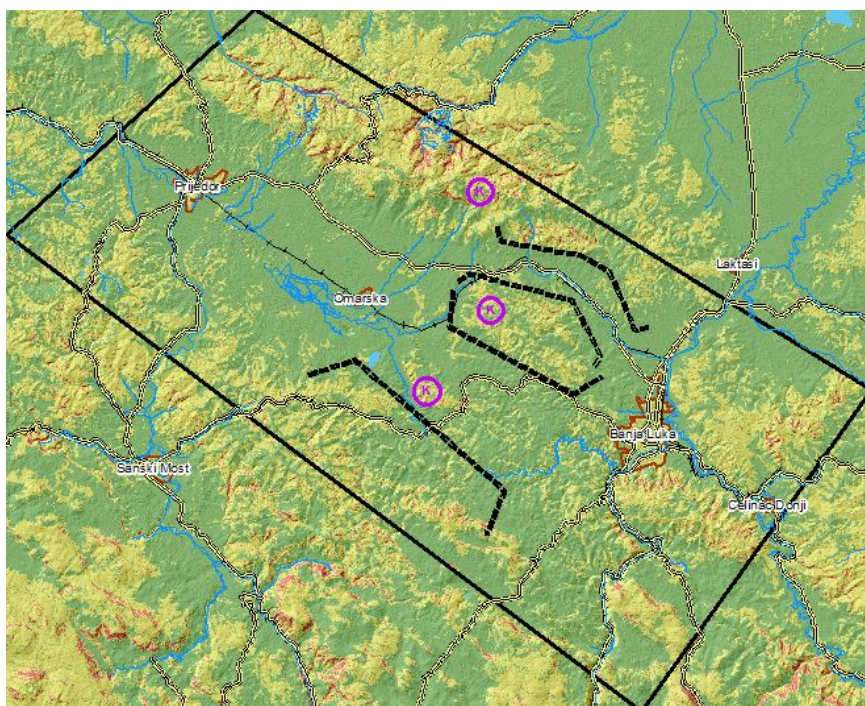
## Results

As a result of Weighted Analysis, which has been done with these inputs and settings, and after symbolizing in three classes – Natural Jenks method – the result is the raster that shows which routes mechanized units from the town of Prijedor could take to reach Banja Luka. On the basis of the product of the tool, it is possible to assess where Mobility Corridors and Avenues of Approach, Key terrain, and main obstacles are.



Picture 1 – Suitability of terrain for movement of mechanized units

Three classes have been shown: green for unrestricted, yellow for restricted and red for severely restricted terrain. Also, in the picture 2, additional information has been included such as boundaries of possible Area of operations of a hypothetical enemy, boundaries of the cities of Banja Luka and Prijedor, roads, rivers, etc. which have only been included for easier understanding.



Picture 2 – Suitability of terrain for movement of mechanized units with additional explanation

## Discussion and conclusion

The resulting raster shows that the terrain between Prijedor and Banja Luka is mainly suitable for movement of mechanized units. There is 17 km wide flat ground between the two cities. There are no major obstacles when advancing Prijedor until 16 km before Banja Luka. In front of Banja Luka from the direction of Prijedor there are (at least) three key terrains, which are important for both an attacker and a defender: south-west slopes of Kozara Mountain, Piskavica Mountain and Slavicka hills. The terrain configuration partly canalizes movement of mechanized units into two corridors: southern - approximately 8 km wide and northern –approximately 4 km wide. While there is one main road leading directly to Banja Luka from Prijedor, there is a large number of local roads that allow movement of mechanized units throughout the area with small restrictions.

If there were real situation, this analysis would not be finished completely with this step. This is the first part of analysis, which is the base for complete IPB. For example, the next steps would include an analysis of critical points (bridges, tunnels, etc.), where important intersections (enemy movement in one or the other route can show us its intentions) are, where Mobility Corridors (enemy unit can pass through) are, Avenues of Approach (several MCs leading towards the same point), weather influence, Key Terrain (controlling it can bring significant advantage to the army under whose control it is), population, etc.

However, the aim of this project was to show one possible application of GIS in military terrain assessment. Therefore, the authors restricted the project only to one part of IPB process, plain terrain analysis. There are several points that must be accounted for when assessing reliability of this analysis. Firstly, there is a data reliability issue. The data has been downloaded from the Internet, and as an open source its reliability could be questionable. Secondly, accuracy of the data cannot also be assessed, as all the data comes from different sources. Finally, there have been constant changes related to the environment. New roads are built, new houses, water irrigation systems, etc. That is why data must be double checked, accurate and updated for the military use. IPB has to rely as much as possible on current reconnaissance and information collected by intelligence assets.

It has been confirmed that implementation of GIS in Military Terrain Assessment is possible and it contributes to IPB process. However, it greatly depends on the available data and experience and knowledge of military intelligence analyst, who performs it.

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# METHODOLOGICAL ASPECT OF CONTROLLING CORPORATE INCOME TAX

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**A**udit is an instrument of government and company management, which helps in timely detection of weak points of internal control systems, prevention of abuse and illegal appropriation. At the same time, it proposes measures and activities to eliminate detected weaknesses within an organization and helps in the functioning of internal control systems.

Audit is very important for storing accounting and financial records of an organization, as well as its management. Therefore, everybody is interested in auditing, from external auditors to management, board of directors, from shareholders of large public companies to the state.

Key Words: *audit, company, financial report, system*

## Introduction

**T**he usual definition of an audit is that it is a process, established and systematically conducted by the state, with the goal to establish belief in truthfulness of the presented financial reports, in order to achieve the most important goals in the following documents: reliability of financial reporting, compliance with the existing laws and regulations (primarily tax), protection of assets from unauthorized appropriation, use and alienation, as well as proper relation to the commitments that a company has to the society and the state. This definition reflects some basic concepts: 1) Audit is a "process", which means it is not an event or a circumstance, but a series of activities, which audits business operations. These activities are significant and they are an integral part of the way that a company is managed. 2) Audit is performed by state services, as well as company management in order to introduce adequate control mechanisms. 3) It can be expected from an audit to provide reasonable and absolute conviction to company owners in the quality of management work regarding its obligations to the state. The probability of completion of those goals is affected by limitations inherent to all control systems. 4) Audit is applied in order to achieve goals in one or more than a few categories, which overlap.

There are four basic categories of goals in auditing [1]:

- Business – related to legal use of company resources,
- Tax reporting – related to the credibility of a tax balance, and in accordance with that, published financial reports,
- Compatibility – related to the compatibility of company operations with the existing law and regulations (primarily tax), and
- Protection of budget funds.



Goals related to auditing and compatibility with laws and regulations are based on standards and depend on the way in which control has been performed within an organization. Operational goals such as profit from investment and market participation are not always under direct control of owners, so audit as an external control type contributes to owner's safety, primarily by influencing the quality of management business operations. The analysis performed by the audit firm, KPMG in the USA, has shown that 75% of 500 companies, which were included in the research, pointed out that their basic problem was embezzlement, and that 77% stated at least one such case in the last year. It was estimated that such losses amounted to 244 million US dollars a year. The analysis has also showed that the most common way in which it was discovered was either an audit or internal control.

Audit is primarily interested in controls related to the reliability of financial reporting. Financial reporting is a process in which actions can be vaguely expressed and it represents a completely different picture of a person's business. If controls are adequate they will ensure that, if for example all invoices, cash receipts, write-offs, refunds or corrections are accurate, the final balance on a specific account will probably be accurate.

## Basic principles of auditing

When tax control is in question, it is in fact thought of the basic rules of conduct, which are the consequence of accumulated practical experience and achievements of theory and practice. Having that in mind, principles are the foundation of practice, which have theoretical basis confirmed by practice. Principles understood in this way are not something that is given forever and which is not susceptible to change, on the contrary, by developing theory and practice there is a change – perfection of tax control principles.

With respect to international experiences, views of national and international authors, based on consideration of the essence of auditing, its role and meaning in contemporary market economies, the following principles can be singled out [2]:

- Lawfulness,
- Professional ethic,
- Expertise and competence,
- Responsibility,
- Documentation (obtaining evidence), and
- Correct reporting.

Lawfulness is one of the oldest principles, which demands that the tax authority that performs audits must uphold the existing laws and other regulations in its work.

Professional ethic implies that tax control must uphold certain rules of conduct in its work and behavior in order to protect itself and improve its reputation. Moreover, inappropriate conduct of individual tax controllers, which can undermine the integrity of the profession, must be prevented, and the state should be the authority, which should take care of it.

Expertise and competence demand that tax controllers, other than certain ethical and moral norms should have an adequate level of education and knowledge, which enables them to perform quality control.

With the responsibility principle the state commits to determine and quantify concrete responsibility for omissions in work through auditing. Other than that, it is important to note that controllers are directly and indirectly responsible for their work, and the state essentially takes full responsibility for their work.

Documentation principle is in close connection (as well as other principles) with proper bookkeeping principles. In this context it is considered that every business change must be accompanied by proper relevant documentation. Other than that, in contemporary conditions the documentation principle implies that the opinion on an audit must be based on evidence, which is documented.

Correct reporting principle obligates tax auditors to report truthfully on all determined irregularities found during the audit process in an organization. Untruthful reporting entails certain consequences regarding responsibility.

Methods that an audit uses when performing its mission are in direct relation to the principles and they are susceptible to continuous improvement.

## Proposition of an audit model

It has already been noted that operations of contemporary business as a system are the object of attention of many subjects and that the data on its operations, state and results is available in accounting and presented to the public through financial reports. Let us consider the amount of changes that a large system has in its operations and how hard it is for a disclosed report to show correct data on financial, property and any other position of that system.

Adequate audit should give feedback on accounting reports created in the frame of most common goals of financial reporting, based on accounting assumptions and principles and under significant influence of a company's adopted accounting policy.[3]

In the least, contemporary auditors are not certain whether financial reports have been compiled in accordance with accounting and tax regulations, principles and standards, unless external audit that a company is obliged to fulfill, performs its mission.

The audit work is entrusted to the audit professionals, whose task is to add trust to disclosed financial reports. Tax auditors perform control over company's financial reports with the goal of timely prevention of tax evasion of corporate income tax, which companies are obligated to pay in accordance with which they make a tax balance as an instrument that serves for verification of adequate business operations. Tax balance is an unbiased instrument that is a mirror of taxpayers operations despite other financial reports that differ from company to company either formally or essentially. In order to conduct tax auditing of financial reports successfully like any other activity it must additionally perfect the methods and rules that it will use in the future. Methods always contain rules, which should be abided to, and rules arise from theory of a certain scientific discipline – in this case public finance.

According to it, it is wrong to separate and observe theory and methods independently. The unity of theory and methods is reflected in the fact that the system of attitudes of a theory contains the rules (principles) of the method, as well, which should be conducted. Other than that, audit methods are established by object, subject and principles. [4]

When auditing methods of financial reports are in question, it is necessary to consider them in the context of interdependence, on the one hand with theoretical attitudes on control and on the other hand with the object and subject of control.

It is common to think that audits use some common methods, used in almost all areas of business control, out of which most common are inductive, deductive and experience methods. However, the state primarily uses its specific methods when performing audits, also known as specific control method. Among those specific control methods there are intensity of examination method, direction of examination method, area and continuity of examination method, as well as way of testing method.

Other than that, it has lately been pointed out that control should use analytical methods in its examination, which are based on parsing and comparing. A similar approach can be found in American literature, where it is emphasized that audits, among other things, include certain analytical procedures such as, for example, comparison (primarily through comparative financial reports) and use of indicators (primarily meaning indicators of financial analysis and analysis of financial reports). Other than that, when considering the future development of Serbian tax practice, the significance of using analytical procedures in control is pointed out.

On the basis of knowledge of basic tasks of auditing, as well as methods and procedures that it uses, its orientation to successful operation of the budget system, primarily proper relationship of a company and the state through credible financial reports, it can be concluded with a certain dose of safety what its place and significance at a global and state level is.

The adequate positioning of place and role of auditing is uncommonly important for all users of financial (and of course auditing) reports because if the users can understand them better, they will improve their position in making better decisions, giving them a bigger advantage to other users of financial reports. Such interpretation primarily starts from auditors. It should also be noted that a minimum of knowledge in accounting is required, or as it is often known, an inadequate title – accounting literacy. [3]

Insisting of the state on consistent respect of determined principles and standards when making and disclosing financial reports through auditing, implies that audits in the future should undergo with the application of certain methodology. Everything is directed at achieving a basic goal, which in essence comes down to the fact that information disclosed in financial reports at a global and state level should be precise, credible, mutually comparable with the goal of stable and safe budgeting regarding corporate income tax. Therefore, contemporary tax control makes efforts in reducing tax evasion.

This way of auditing is based on feedback on company management, primarily through owners. If there is larger expenditure regarding corporate income tax, owners can look at it ambiguously, some will look at it as successful performance of a company, while others will look at it as a failure of the management due to the owners' excessive desire for profit. This is one of the dominant reasons why the accounting profession in market economies is considered as one of the pillars of maintaining the owner's profit.

## Projection of limitations of an audit

When explaining restrictions we will try, as much as possible, to explain and quantify their influence on the results of control as a whole. Limitations, which will be pointed out are related to control of financial reports by audits, and they will be grouped in the following way [5]:

- By the method of selection and use of samples;
- When control is performed in the conditions of a modern computerized accounting system;
- Regarding control and other relevant risks; and
- Relevance of the acquired evidence.

In essence, auditing is based on samples because examining all changes – transactions would require too much time and it would be very expensive. It is notable to say that complete examination is unnecessary in most cases because the goal of audits is to acquire enough credible evidence to enable an appropriate conclusion regarding the correctness of reports on funds that a company provides to the state. However, there are very rare occasions in which auditors will decide to examine the entire population.

Since control is based on samples, in regard to that there is a sampling risk. It is the risk that exists due to the possibility that conclusions based on results of examining a sample would be different from a conclusion that an auditor would make if they performed control procedures on the entire population, making it a significant limitation.

When creating their control methodology, auditors should determine appropriate ways of selecting a sample in order to acquire evidence for achieving the goals of this type of control. However, it is very difficult to put this request into practice. Sampling in auditing systems can be statistical and non-statistical. Statistical sampling is based on laws of probability while in non-statistical sampling control is based on subjective judgement in determining the size of a sample and evaluation of results. Due to this, in non-statistical sampling there is always a latent possibility for auditors not to select a representative sample. However, both can and do give effective results if they are designed properly, and the basic difference is in the fact that statistical sampling enables measuring sampling risks, i.e. enables better view of samples representability in relation to the population. [6]

If auditors decide on applying statistical sampling (which is significantly more represented in practice), it has methods of non-systematic and systematic sampling, block pattern and random sample at its disposal. All of these actions related to the choice of sample are called methods of planning samples. We are of an opinion that all mentioned methods, despite certain limitations, can be applied in practice successfully, which again depends on assessment and decision of auditors. Auditors can, for example, decide to apply random sample method for control of accuracy of entries regarding debt based on declared tax by using [7]:

- Random number tables;
- Systematic selections;
- Random number generators.

We would like to point out one more time, no matter which sample is selected, it must be representative (it must reflect the entire population with its relevant features), i.e. it must provide a certain degree of reliability of obtained results with optimal conditions of speed and efficiency. Thus, when a sampling population consists of all items and changes that are related to it, a sample is selected out of it and results can relate only to that population (in our case to financial reports as a whole).

Auditors will have full freedom in applying sampling, so, for example, they can decide to define a population that includes certain transactions of an earlier date, and then consider whether additional tests are needed for the remaining period, which will depend on results from earlier tests, length of the remaining period, nature and amount of changes, which are completed during the remaining period, evidence on effectiveness of control obtained through final auxiliary tests, etc. Business operations of large systems in contemporary conditions are unimaginable without contemporary computerized (accounting) information system (CIS). Management is responsible for creation, organization and work of such system, and auditors must be ready to perform quality control in such conditions.

In order to be able to do it properly, it must entirely understand computerized accounting information system and all relevant control policies and procedures of the system in which this control is performed. Goals of auditing would ordinarily be the same. However, in the conditions of computerized accounting information system, attention must be directed at:

Transaction traces. Certain computerized accounting information systems are created in such a way that transaction trace can exist only in certain period, which controller should certainly know. If they assess that the relevant trace is not available in a given moment, they can demand from the personnel responsible for computerized accounting information system to perform its complete or partial reconstruction.

Separate functions. Many control procedures are most frequently unified in computerized accounting information system and taxation control should be able to separate them completely.

Possibility of errors and irregularities. There is a possibility of the existence of unauthorized access to certain data or even change to certain data without any visible trace. This relevant possibility represents a big limitation for auditing and due to it, it should dedicate most of its time to this area because it is very susceptible to errors, speculations, as well as criminal acts in the broadest sense.

Due to its good characteristics, contemporary computerized accounting systems have great advantages in relation to manual bookkeeping. Therefore, they are used in the largest number of companies today. However, due to these characteristics, there is a possibility for errors, fraud and even criminal acts to occur.

Specific technical controls have been developed in direct proportion to the development of CIS and there is such variety of them today that it is impossible to count them all. Thus, we will emphasize only a few of the possible approaches.

For example, tax control can decide on the so - called reversible method, which implies that firstly the most significant items in disclosed financial reports are identified and then they follow the transactions that influence each individual item from the financial report to the source document, i.e. backwards.

According to our opinion, other than this, the so-called real structural control is very effective. However, it is much harder to apply it since it demands the excellent knowledge of computers, but it usually provides good results in practice. This method implies that real data is implemented in computerized accounting information system after detailed information on the structure and functioning of computerized accounting information system is known and then comparison is performed with earlier verified results, thus grading reliability and accuracy of the company's computerized accounting information system. It is important to note that the combination of methods usually gives best results in proper understanding of financial reports.

Relevance is one of the most basic concepts in control in general, as well as in auditing. In this sense, information is relevant if leaving it out or showing it incorrectly could influence economic decisions of users based on financial report. After acquiring and evaluating evidence and implementing control procedures, an audit should ensure for reasonable belief that financial reports do not contain significant errors in regard to mechanical accuracy, existence, entirety, ownership, evaluation, classification and disclosure. Direct conduct of relevance in auditing is expressed as [8]:

- Preliminary assessment of relevance at the level of financial reports;
- Allocation of preliminary relevance to certain segments; and
- Assessment of probable mistake and its comparison to permissible error.

Preliminary assessment of relevance at a financial report level represents the maximum deviation, which control believes that financial reports can contain that will not influence the other positions of financial reports. After calculating preliminary relevance according to certain methodology, its allocation to certain segments is performed. The following factors dominantly determine that allocation [9]:

- Relative participation of a given position;
- Possibility of an error; and
- Costs of a specific audit.

Work documentation of auditors must be complete and filled in detail, which practically means that it is possible to perform recapitulation of the entire procedure that auditors have conducted based on it. This is particularly significant when court disputes occur and there is a demand for compensation of damages. Quality and volume of documentation will greatly depend on the knowledge and experience of auditors, as well as their capabilities for analytical judgement.

## Identification of risks relevant to an audit

When performing audits it is inevitable that mistakes occur and they carry a certain degree of risk.

One of the most important risks is sensibility of accounts and balance in financial reports on materially wrong reviews. Understanding this risk should be based on better knowledge of operations of certain business and its parts, as well as previously conducted analytical procedures and other control procedures. Considering that this risk is immanent in all business changes, it is necessary to perceive and quantify changes in the surroundings that provide the basis for its occurrence.

When assessing this risk, audits will primarily use professional judgement, especially in regard to [10]:

- Integrity of the management system;
- Experience and knowledge of the management system, as well as the influence of fluctuations in the management system;
- Unusual pressures on the management system (for example, in regard to conduct of certain activities);
- Nature of operations of a legal entity (for example, the expressed need for state subventions); and
- Other.

At the level of individual accounts and types of business events, certain accounts are susceptible to errors (most often those are sales revenue accounts, cost of amortization, cost of supplies, etc.), complexity of certain business changes, judgement degree when determining conditions, susceptibility of loss or illegal appropriation of assets, completion of unordinary and complex business changes and business events, which are not included in regular processing. [11]

For adequate risk assessment it is necessary to compare information on certain part of a company with relevant data on the other parts within a company or outside it. Auditors must know the accounting policy and business practice of a taxpayer very well, as

well as functioning and basic characteristics of accounting information system and the level of adoption and implementation of accounting standards and principles.

It is impossible to conduct all control procedures, which should include policies and procedures of complete understanding of the entire business system of a taxpayer through an audit. When an audit completely grasps the taxpayer's system it must perform preliminary assessment of risk of all types and volume of business events.

Auditors should document the complete understanding of the taxpayer's business system in their working papers, as well as the assessment of relevant risks and their relation to total risk, which should all be documented in their working papers. Different methods and techniques, which have been presented, can be used for documentation. However, the most significant role is the experience of people, who perform the audit. [12]

In the future tax practice, there will often be a risk of failing to uncover the possibility of existence of wrong representation or a mistake that auditors will not be able to reveal by application of the current methods and analytical procedures. This risk most commonly occurs as a consequence of inefficient and insufficiently prepared procedures and to a smaller part because testing of transactions is almost always performed on the basis of samples. In order to reduce all relevant risks to an acceptable level, auditors should conduct all procedures of essential examination on all relevant positions, independently of assessed level of any individual risk.

## *Conclusion*

Corporate income tax should be stable budget revenue with a tendency for continuous growth. Budget income based on this revenue should be secured through continuous control of taxpayers that pay this type of tax. The state tries to ease the conduct of the aforementioned by passing precisely defined norms through which information is presented and making sure that it is consistently applied. Conditions for implementation of these norms in practice are not easy at all, considering the fact that management of companies has the goal to achieve evasion of this type of tax. In this sense, it is necessary to devise and institutionalize an adequate auditing system.

In the paper we have defined this type of auditing as a process that is adopted by the state and systematically conducted, with the goal to provide security related to truthfulness of financial reports, in order to achieve the most important goals in the following domains: reliability of financial reporting, compliance with the existing laws and regulations (primarily tax), protection of assets from unlawful appropriation, use and alienation, as well as proper relation to the commitments that a company has to the society and the state. In order to achieve the set goals, the control needs to be devised and established in accordance with the principles applied in the developed countries. Adequate application of such principles should provide better methodology in performing the future tax audits. Bearing this in mind, we have presented certain theoretical and practical methods in the paper, which could be used when performing the future audits in the Republic of Serbia.

When we talk about new and still unaccepted methodology in our country, it is inevitable that certain limitations will occur in its implementation in our practice. We have identified those limitations in the paper, with the goal of their timely and better resolution.

Every control carries certain risks, which primarily characterize tax audits. These risks have also been identified and analyzed.

On the basis of everything mentioned, we have come to the conclusion that it is necessary to modify the existing auditing system of the Republic of Serbia in accordance with experience of the developed countries and our specific needs. This also provides regular budgetary income and even redistribution of national income. The extent to which our country is ready to accept contemporary methodology of auditing will improve the level of quality of our economic and law system at the international level.

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# PROBLEMS OF INHABITANTS OF MUKTAGACHA TOWN IN MYMENSINGH DISTRICT IN TERMS OF URBAN SERVICES IMPORTANT FOR SECURITY IN NATURAL DISASTERS

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The term urbanization normally connotes a trend in increasing proportion of the national population living in urban centers (towns & cities), as well as an increase in the number of urban centers over a period of time. Thus, it means population shift from rural to urban areas and the ways in which a society adapts to the change. It generally results in the physical growth of urban areas. It is predicted that by 2050 about 64% of the developing world and 86% of the developed world would be urbanized. An urban area can refer to towns, cities, and suburbs. An urban area includes the city itself, as well as the surrounding areas. Many urban areas are called metropolitan areas. In short, it is a geographical area constituting a city or town, where various urban services like electricity, gas, water supply, health facilities are available. Urban services are necessary transition in provision of facilities provided by urban areas. Generally, it is the responsibility of each country to provide urban facilities to its inhabitants. This study focuses on urban services that people of Muktagachha town in Mymensingh District have enjoyed and the major problems they face while getting urban services, as well. Since Muktagachha town is very close to Mymensingh Sadar the trend of urbanization is increasing here. In fact, it is a well – developed upazila of Mymensingh District. The supply of urban services in this upazillais continuously increasing and the quality of these services tries to increase as stated by the upazilla mayor. However, inhabitants still face various problems in getting urban services. This research is going to discuss what types of problems the inhabitants face and what steps can be taken by the pouro authority to improve the quality of urban services.

Key Words: *security, natural disasters, citizens, religiosity level, perception*

## Introduction

Generally, an urban area is an area where various urban services are available. An urban area is the region surrounding a city. The majority of inhabitants of urban areas have non-agricultural jobs. Urban areas are developed to other subsequent centers, meaning there is the density of human structures such as houses, commercial buildings, roads, bridges, and railways. "Urban area" can refer to towns, cities, and suburbs. An urban area is a location, which is characterized by high human population density and vast human-built features in comparison to the areas surrounding it. Urban services are defined as those public services and public facilities historically and typically provided in cities. Urban services specifically include: electricity facilities, gas facilities, sanitary sewer systems, drainage systems, domestic water systems, street cleaning services, fire and police protection services, public transit services, etc.

It also defines public facilities and public services, which in addition to those defined as urban services, also include streets, roads, highways, sidewalks, street and road lighting systems, traffic signals, parks and recreational facilities, as well as schools, public health, environmental protection and other governmental services. The requirement is that the large majority of population, typically 75%, is engaged in non-agricultural sector. Although some of these services may be provided in rural areas, urban areas are typically served by higher capacity systems capable of providing adequate services at urban densities. Storm and sanitary sewer systems are the only services that are generally exclusive for urban growth areas. Outside urban growth areas storm and sanitary sewer systems are appropriate in limited circumstances, when it is necessary to protect basic public health, safety and the environment and when such services are financially supportable at rural densities and do not permit urban development. Due to the fact that these services are usually necessary to support urban densities, services provided must be adequate in order to allow development at urban densities and to serve development at densities consistent with the land use element. The obligation to provide urban areas with adequate public facilities is not limited to new urban areas. Counties and cities must include in their capital facilities element a plan to provide adequate public facilities to all urban areas, including those existing areas that are developed, but do not currently have a full range of urban governmental services or services necessary to support urban densities. In general, cities are the most appropriate units of government for provision of urban governmental services. However, counties, special purpose districts and private providers also provide urban services, particularly services that are regional in nature. Counties and cities should plan a transformation of governance as urban growth areas develop whereby annexation or incorporation occurs, and non-regional urban services provided by counties are generally transferred to cities.

The capital facilities and transportation element of the county or city comprehensive plan must show how adequately public facilities will be provided and by who. If the county or city with land use authority over an area is not the provider of urban services, a process for maintaining consistency between the land use element and plans for infrastructure provision should be developed consistently with the county wide planning policies. If a city is the designated service provider outside its municipal boundaries, the city capital facilities element must also show how urban services will be provided within their

service area. This should include incorporated areas and any portion of the urban growth area that is assigned as a service area or potential annexation area designated under the capital facilities element.

In general sense, urban problems are those problems that arise in an urban environment from overcrowding and too rapid, uncontrolled development of urban areas. Urban problems are those that result from having a large number of people living, working and travelling within a relatively compact area. They include things such as pollution, sanitation, crime, traffic, housing, unemployment, higher cost of living and higher taxes to pay for city services. In other opinion, urban problems are those which are addressed by urban dwellers. On this earth every urban area has more or less common problems, which include the following: traffic congestion is common in narrow streets; there are poor ventilation and illumination; there are not enough open space and community facilities, e.g. parks, schools; there are improper sanitation facilities (e.g. inadequate kitchen and toilet facilities); there are illegal or unstable structures (e.g. squatter settlements on rooftops); the old buildings are deteriorating; they are overcrowded and have poor living conditions; the buildings have shabby appearance (e.g. peeling paint, rusty window frame); residential flats are mixed with industrial use and they cause noise, air pollution, health and fire hazards. Social problems are common, e.g. crime, vandalism. However, it often differs from city to city, country to country.

## Urbanization & urban problems in Bangladesh

According to Rasheed, K.B.S. urbanization is thought to be started in Bangladesh over two thousand years ago, when they were concerned with setting up administration, trade, commerce and certain religious celebrations. It has been related to the background of historical antiquities. The country still does not have the huge urban settlement to be identified as towns and cities in the modern sense of the term. Until recently, the country was largely rural. In 1961, more than 5% of the population lived in urban areas. Since independence in 1971, Bangladesh has experienced enormously high rate of urbanization, which has more than three times exceeded the national population growth rate. Rapid urban settlement is the feature of the contemporary urbanization in Bangladesh. It is estimated that nearly 50% of the national urban population is crammed into four metropolitan cities: Dhaka, Chittagong, Khulna and Rajshahi. All these cities show the increasing number of population in every census. According to the World Bank (WB) Bangladesh Development Series(2007), urbanization in Bangladesh has been going up at higher pace. After independence in 1971, the country's national population growth was 2.2, and the urban population growth was 7% yearly. According to the UN population division, almost 35 million, i.e. 25% of the country's total population lives in urban areas. There are many urban problems in Bangladesh such as urban congestion. Urban congestion is basically overcrowding and an imbalance between the ratio of urban functions and the population also contributed to the problem. The most common urban problems in Bangladesh are: water shortage; mosquito menace; sanitation problems; poor ventilation; poor cleaning and maintenance service; pollution; corruption and insecurity; overcrowding and congested areas; narrow access to roads; lack of parks and playgrounds;

lack of outdoor sports and recreational facilities; lack of health care facilities; fire due to faulty gas and electric line; faulty drainage systems; electricity crisis; drainage congestion; damp houses; in-house water stagnation.

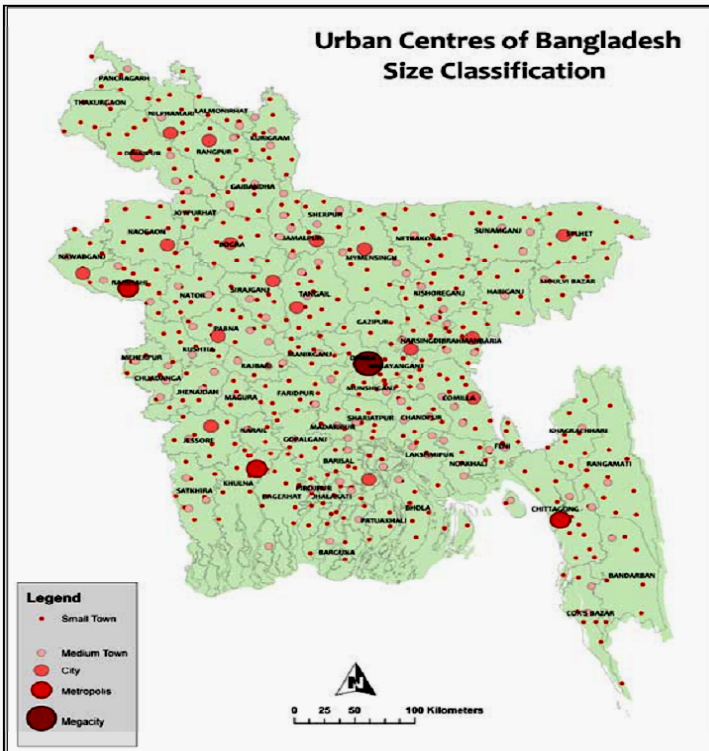
Since Bangladesh is one of the fastest urbanized developing countries, living in urban areas is not much more different experience than it is anywhere else in the world. Due to overgrowing population, small area, poor governance and unstable economy, people of this country face various problems in getting urban services. The problems are more present in most of the district areas in Bangladesh. The people of Dhaka city enjoy most of urban services, but there are problems in getting urban services because Dhaka is the capital of Bangladesh and the most crowded city in Bangladesh. People crowd to Dhaka city in a sense that “*when you need taka go to Dhaka*” because once they come to Dhaka they can get a job to support their family. This causes a great problem in getting urban services. Nowadays, urban service provision authority in Bangladesh faces great problems in providing these services. The urban system in the country is composed of a hierarchy of urban centers by population size from the Mega / Metro City to a small hamlet. Although urban geographers would prefer to classify urban centers in Bangladesh in 7 size classes (Islam & Hossain, 1976), the classification given by the Bangladesh Census Commission is a combination of population size and administrative or governance structure. The Commission has classified the urban centers into following four categories: Megacity, Statistical Metropolitan Areas (SMAs), Pourashavas and Other Urban Areas. It recognized some 522 urban centers in the country in 2001.

– Megacity: A metropolitan city with population of more than 5 million was termed as Megacity in the census of 2001. There is only one Megacity in the country, Dhaka, with an estimated current population of about 14 million. Even in 2001, Dhaka Megacity was not a single city, but an agglomeration of several ones including Dhaka City Corporation area, six Pourashavas and numerous Union Parishads or villages. In 2011, two new City Corporations (Narayanganj and Comilla) have emerged through merger and upgradation of Pourashavas. Such administrative changes require new urban governance system. Dhaka Megacity (or Dhaka Capital Region) will demand a very different governance structure in the future. Governing the megacity region is complex and difficult because of multiplicity of agencies involved in planning and providing different services to the people of the megacity region.

– Statistical Metropolitan Areas (SMAs) are the City Corporations and their adjoining areas with urban characteristics. On the basis of this definition, BBS (2003) identified three Metropolitan areas in the country in 2001, namely Chittagong (3.38 m), Khulna (1.34 m) and Rajshahi (0.7 m), besides Dhaka, which is a Megacity. These three cities had total urban population of 5.42 million, or about 19% of the national urban population in 2001. The Megacity Dhaka and three Metropolitan Cities together absorbed about 56.44% of the total urban population of the country. Metropolitan Cities are given the status of City Corporations. The next category of towns is the Pourashava. The areas declared by the Ministry of Local Government, Rural Development and Co-operatives as Municipal Towns or Pourashavas have the formal urban status with local governments. During the 2001 Census, there were 223 Pourashavas in the country. In the same census, 11 Pourashavas were parts of four largest cities – Dhaka, Chittagong, Khulna and Rajshahi. The remaining pourashavas, 212, had a total population of about 9 million, or 31% of the national urban population. Currently, the number of Pourashavas is about 315.

– Other Urban Areas are upazila headquarters or big market places in rural areas, which have not been declared Pourashava yet during the census operation. The areas, which conform to urban characteristics were considered as Other Urban Areas (OUAs). Recently OUAs, about 200 of them, have absorbed less than 4% of the national urban population. In Bangladesh the urban local governments elect bodies and have their own distinctive governance system and varying degree of autonomy by municipal status (such as Class A, Class B and Class C categories of Pourashavas and the City Corporations).

The following map shows urban centers in Bangladesh with urban hierarchy. It shows data about urban centers in the year of 2001. At present, the numbers of urban centers are increasing more rapidly. The government undertakes various projects and programs, and it also renders various assistance to improve the services and make them available to people.



Map 1.1 – Urban Centers in Bangladesh (2001)  
(Source: www.isocarp.net)

Muktagachha upazilla in Mymensingh District is the fastest growing upazilla and the quality of urban services is more or less getting improved. Although people face problems with getting urban services, this study is going to focus on various urban problems and also some recommendations.

## *Aims & objectives*

From the abovementioned problem some aims and objectives of the study have been drawn. These are: to know the existing urban services of Muktagachha town; to identify the present status of urban services; to explore the problems that have been faced by the inhabitants of Muktagachha town; to access the quality of urban services of Muktagachha town; recommendations for betterment.

## *Literature review*

Literature review generally discusses published information in a particular area in a certain time period. It is usually the summary of sources, and it often has an organizational pattern and combines both. When there is time limitation literature review can give an overview or act as a stepping stone. Some literature review related to the research is going to be mentioned here. A.K.M. Helal uz Zaman, Khan Md. Tariqul Alam & Md. Jahirul Islam (2010) in *Urbanization in Bangladesh: Present Status and Policy Implications* stated that a major change to be witnessed in Bangladesh over the next decade would be the rapid spread of urbanization. Unless this spread is effectively managed, the chaotic conditions and accompanying ills like pollution, joblessness and exacerbation of criminal activities are likely to choke growth. An attempt to examine the current situation and trends of urbanization in Bangladesh has been made. Urban migration and population growth trend in Dhaka city has been critically examined. The forces which work behind rapid urbanization in Bangladesh have been identified. An evaluation has also been made to assess the positive and negative impacts of urbanization. Finally, a number of recommendations have been put forward to face the challenges of urbanization in Bangladesh. Rasheed, K.B. Sajjadur (2008) claims that the urban sector in Bangladesh experiences the most severe impact of population growth. Being one of the poorest countries, Bangladesh faces tremendous challenges in coping with infrastructure and service requirement. He mentioned that urban sector dominated non - agricultural activities and it contributes over 60% of GDP as opposed to only 21.77% by agricultural sector. Since independence, the urban population in Bangladesh has grown at an annual average rate of six to seven percent. Consequently, during the four census periods of 1974-2001 urban population of the country has increased six times as compared to 70% increase in rural population. Like most of the emerging economies, urbanization in Bangladesh is a by-product of economic development. He mentioned that from 1974-1981 urban population had grown by over 10%, which is the fastest rate in the country's history. Since then, the country's urban population continued to grow at a rapid rate in response to the push factors (rural poverty and landlessness) obtained in rural areas and the pull factors (better income generating opportunities) of urban centers. The movement of impoverished people from rural to urban areas, especially Dhaka, has contributed to the growth of slum and squatter settlements. Nearly half of the country's total urban population lives in four largest cities – Dhaka, Chittagong, Khulna and Rajshahi in the mentioned order. He also indicated that the decadal growth rate from 1991-2001 for these four cities was 56.5, 44.2, 33.8 and 28.5 percent respectively. Finally, he mentioned that the process of urbanization in Bangladesh is both rapid and uneven, and the ever growing population causes several problems in urbanization process. Rahman, Md. H

(2011) stated that Bangladesh is a developing country with diversified environmental issues, especially in the city area. His study was conducted in Sylhet City Corporation, one of the rapidly developing urban areas in the north-eastern region of Bangladesh, in order to identify the main environmental problems caused by the rapid increase in population, unplanned urbanization and hill cutting. The major environmental problems in the city are traffic obstruction, inappropriate solid waste disposal system, inadequate water supply, water logging state, hill cutting, chance of seismicity, etc. Thus the nature and lifestyle of Sylhet intimately related to hills are under the threat of a drastic imbalance in its ecosystem. This study also investigates the causes of hill cutting along with its probable impact on environment such as deforestation, loss of biodiversity, ecological imbalance and climatic changes, chances of earthquake will increase, destroying natural beauty, causing soil erosion and landslide, etc. Sylhet is located in highly seismic risk zone 3, and most buildings and apartments are constructed without considering earthquake risk. Finally, he recommended that the City Corporation authority should take a new approach to tackle urban problems by investing in new ways to solve them, taking advantages of unused resources and opportunities.

Ahmed, Md.Faysal and Islam, Md. Shahidul (2014) worked on urbanization and environmental problems in Sylhet City and they stated that the process of urbanization in Sylhet City Corporation in Bangladesh (SCC) is unplanned. Their study showed that rapid urbanization had created social, economic, environmental and cultural problems. The effects of urbanization of Sylhet City threaten lives, livelihood, assets, infrastructure, drainage system, slums, environmental quality and economic gains of city dwellers, particularly the urban poorest dwellers. Disposal of garbage in nearby drains low lands, discharge of wastewater into open roadside drains, concentration of hanging latrines in lower income settlements areas, annual flooding, noise and domestication of cattle and poultry are major environmental problems faced by Sylhet City dwellers. Social crime like ransacking, robbery and toll evasion in the city are common to resolve the effect of urbanization, they suggested that the citizens should be conscious as well as government should take proper initiatives and policy.

Ram Ahuja in his book *Social Problems in India* (1997) has examined the cities or towns problems. He says that the increase has led to problems like crime, drug addiction, pollution, juvenile delinquency, begging, alcoholism, corruption, unemployment, housing shortage, overcrowding and slums, poverty, noise, communication and traffic control among others. However, if cities are places of tension and strain, they are also the centre of civilization and culture. They are active, innovative and alive. He identified five major causes of problems in urban life such as migration in and out of a city, industrial growth, apathy of the government, defective town planning and vested interest forces. He also discussed the social effects of urbanization that may be analyzed in relation to family, caste, social status of women and village life. In order to deal with urban problems he has given some suggestions such as systematic development of urban centres and creation of job opportunities, regional planning along with city planning, encouragement to industries to move to backward areas, municipalities to find their own financial resources, encouragement to private transport, adoption of pragmatic housing policy and structural decentralization. In his book the writer has only analyzed the social effects of urbanization. However, he has not discussed environmental, economic, cultural and other effects of urbanization. In Bangladesh urban crime has grown faster than the rural area. Rahman showed that crime related to property such as robbery, dacoity, mugging,

bomb throwing, armed violence and murder were the greatest criminal offences in metropolitan areas in Bangladesh. Moreover, violence against women and drug abuse are also common criminal acts in urban areas.

Islam (1999) identifies some positive and negative impacts of urbanization in Bangladesh due to migration. The positive consequences are higher productivity, greater income opportunity, decline in fertility rate, empowerment, better access to information technology and the negative consequences are housing problem, slums problem, poverty, income inequality, violence and crime, loss of national cultural identity, etc.

Laskar (1996) finds that urbanization rate in Bangladesh has been high in the recent decade. The city grows faster in highly urbanized areas than less urbanized ones and the growth of smaller urban centers is lower than the large urban centers. Rana (2010) showed that although many cities grew faster in Bangladesh, a major challenge to create sustainable cities in Bangladesh arose. The cities face environmental, social and economic problems. Most of the urban areas face the housing problem in developing countries. Most of the people in Dhaka city face the lack of infrastructural services (e.i. water supply and sanitation electricity supply, housing, drainage, roads, gas, etc). Moreover, environmental problems such as air, water and noise pollution are also the major problem in an urban area. Kawsar (2012) showed that Bangladesh had experienced rapid growth of urbanization in the last three decades, but it is a matter of inconvenience that many negative impacts like environmental pollution, unplanned urban growth, income inequality, etc. arise.

## *Methodology*

The study area is large enough to get detailed information. The study has been conducted in Muktagachha town in Mymensingh District. Interviewees have been selected by random sampling. Most of the people from this area get more urban facilities, and they face some problems. Having this in mind, the following steps have been taken to complete the study: primary data have been collected from the field visit, questionnaire, participatory observation and telephonic survey; secondary data have been collected from different organizations and BBS (Bangladesh Bureau of Statistics), books, journals, articles, conference reports and online sources. The collected data were processed and analyzed. Suitable graphs, figures, maps and tables have been prepared. Microsoft Office Excel and GIS (Geographic Information System) software have been used to prepare tables and graphs.

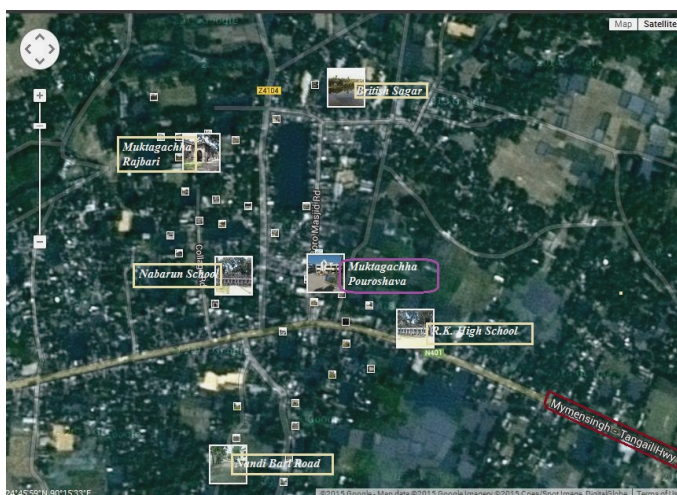
## *Site selection*

The first step of this survey was the selection of the study area. The study area here is Muktagachha town in Mymensingh District. This area has been selected due to several reasons. The area is very close to Mymensingh Sadar. It connects Tangail and Jamalpur Districts with the main area of Mymensingh District. Due to its well-developed highway, this area is well-connected with Mymensingh town. You need about 20-30 minutes to get to the main city of Mymensingh town by vehicle. Since it represents the gateway to Mymensingh from Tangail District, it is important to know about the urban facilities, the quality of them, what problems they face and it is also important to improve the quality of these services for life betterment.





Map 1.2 – Digitized map of study area  
(Source: www.muktagachhapouroshova.org)



Map 1.3 – Location of Muktagachha on Google earth map  
(Source: www.google earth.com)

### *Preparation of Questionnaire*

The second step of the study was to prepare a questionnaire. A scientific questionnaire based on urban services has been prepared. There were both open - ended and closed - ended questions in the questionnaire.

### *Data collection and manipulation*

Data collection is an inseparable part of any type of research work. The researcher has collected data from the respondents within a semi-structured interview schedule (questionnaire) having both closed and open questionnaire. The survey was conducted in August 2014. After conduct of the survey, researcher manipulated data. After that, the data were processed and analyzed through Microsoft Office Word and Excel (to make essential graphs and tables), Adobe Photoshop, GIS software, Google earth software, and other software programmers' intellectual skills and a wide range of thinking was also applied for analysis purpose.

### *Data presentation and limitation of the study*

After conducting analysis, the researcher has presented the findings in this report by description, graphs, maps, tables, etc. to make this study applicable. There are the following limitations of this research: Time and resources were restricted, so it was not possible to survey all of the area; sometimes people hesitated to give the specific answer; some respondents gave confusing answers; no previous urban services projects have been done; urban service data are not so available. Sometimes pouro authority gave confusing answers like the establishment of postal department and also the establishment of rural electrification board in this upazila.

### *Conclusion*

Bangladesh is one of the world's most densely populated countries. The country is going to witness the rapid spread of urbanization over the next decade. According to the estimation, by 2020 nearly every other man, woman and child will live in an urban area. It is an undeniable fact that urbanization is the inevitable destiny of the human civilization. However, the way cities, both at home and abroad, are growing is not sustainable at all. Therefore, it is an imperative that governments across the globe should fundamentally rethink policies and approach to urbanization management before it is too late.

### *Study area*

Selection of a study area is the most important factor for any analytical research. In this research the study area is Muktagachha town in Mymensingh District. This area has been selected because it is located in the vicinity of the main sadar of Mymensingh Dis-

trict. In recent years the process of urbanization in this area has increased. The most important factor is that this area has great historical background. It has emerged as a great tourist attraction because of the relics of Rajbari (which is currently used as an educational institute). It is also well-known for sweets, which are made here (locally called monda). Muktagachha upazila is also important as a gateway of Tangail and Jamalpur District to the main city of Mymensingh District. In this section the discussion of Muktagachha upazilla will be given.

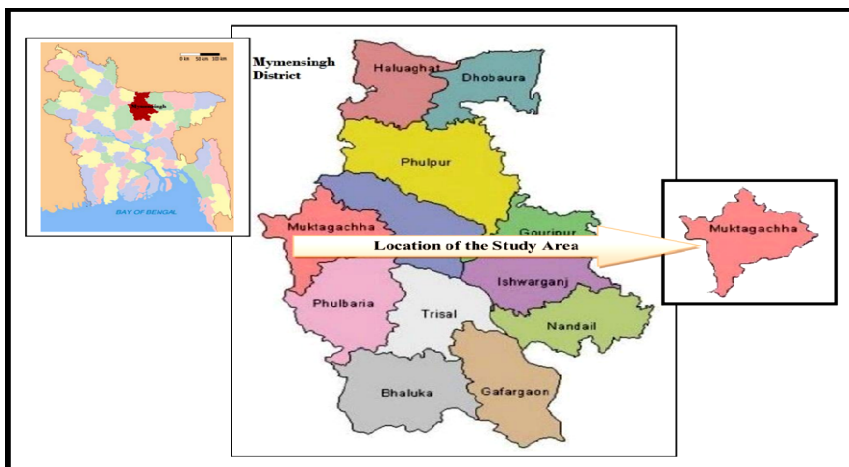
### Geographical location of Muktagachha

Muktagachha Upazila (Mymensingh District) area is 314.71 square kilometers long, located in between 24°36' and 24°52' north latitudes and in between 90°04' and 90°20' east longitudes. It is bounded by Mymensingh Sadar and Jamalpur Sadar upazilas on the north, Fulbaria upazila on the south, Mymensingh Sadar and Fulbaria upazilas on the east, Madhupur and Jamalpur Sadar upazilas on the west.



Map 2.1 – Administrative map of Muktagachha Upazila (Source: www.banglapedia.com)

The following map shows the location of Muktagachha upazila on the map of Bangladesh, as well as on the digitized map of Mymensingh. On the map it can be seen that Muktagachha upazila is very close to Mymensingh Sadar. As a result of well connection, public facilities here are being improved.



Map 2.2 – Location of Muktagachha upazilla in Mymensingh District map

### *History of Muktagachha*

The previous name of Muktagachha was Binodbari. It is believed/fact that the Jomirdars actually came from the Natore or Bogra of our North Bengal. When the first ruler arrived here, a local inhabitant called Muktaram Kormokar welcomed them with a large lamp stand that was made of brass. In that part of our country, people call a lamp stand Gachha. This gratitude pleased the Jamidars and they have renamed the areas Muktagachha using the inhabitant's name and the lamp stand's local name.

### *History of the War of Liberation in Muktagachha upazila*

The freedom fighters resisted the Pak army at Jalchatra on their way to Muktagachha on 23<sup>rd</sup> April 1971. The freedom fighters under Commander Refazuddin launched attacks on the Pak army at Bat-tali, Bhiti Bari and Muktagachha Police Station. The Pak army conducted brutal mass killing, torture and plundering in the villages of Binodbari, Mankon, Bouerchar Shasha of the upazila. Muktagachha upazilla was liberated on 10<sup>th</sup> December.

Marks of the War of Liberation are 4 mass killing sites (premises of zamindar Bakul Babu of the upazila sadar, Dumping area, Mankon and Binodbari), 5 mass graves (Dumping area of the upazila sadar, Mazipara of Ishwar Gram, Sreepur in Mankon union, Majhihati, Shasha of Tarati union) and 2 memorial monuments (Majhihati and Bang-banga adjacent Baizana Bridge).

## Administrative & Population characteristics of Muktagachha

Muktagacha has 10 Unions/Wards, 261 Mauzas/Mahallas and 283 villages. According to the census of 2001 by BBS, total population here is 366,397 including 185,909 males and 180,488 females; Muslim 348,178, Hindu 17,248, Buddhist 838 and others 133. Indigenous community such as garo belongs to this upazila.

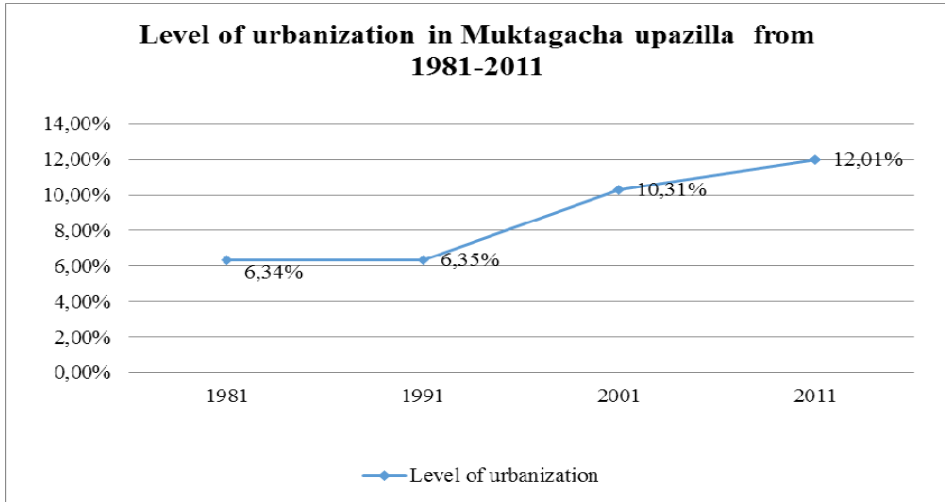
Table 2.1 – Administrative & demographic data of Muktagachha

Upazila								
Municipality	Union	Mouza	Village	Population		Density (per sq km)	Literacy rate (%)	
				Urban	Rural		Urban	Rural
1	10	261	283	37762	328635	1164	48.0	33.8
Municipality								
Area (sq km)	Ward		Mahalla	Population		Density (per sq km)	Literacy rate (%)	
11.97	9		21	37762		3155	48.0	
Union								
Name of union and GO code			Area (acre)	Population		Literacy rate (%)		
				Male	Female			
Kashimpur 51			7489	17618	17068	38.55		
Kumarghata 69			6305	15650	15149	39.16		
Kheruajani 60			7112	16995	16693	33.17		
Ghoga 43			7103	13494	12849	27.73		
Tarati 94			7856	17478	16705	44.30		
Daogaon 25			7579	17079	17249	26.13		
Dulla 34			10284	16401	15747	29.94		
Baragram 16			7290	15405	15245	33.49		
Basati 17			7141	18167	17728	31.03		
Mankon 77			7461	18165	17750	33.62		

(Source: Bangladesh population census 2001, Bangladesh Bureau of Statistics)

## Level of Urbanization in Muktagachha Upazila

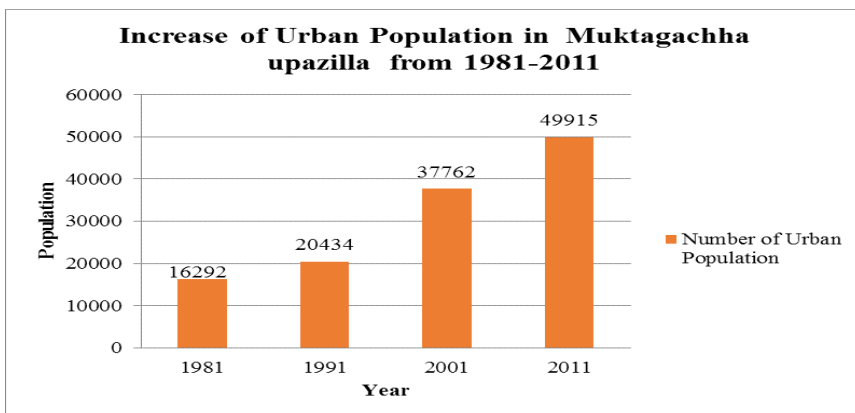
From the following graph it can be seen that the level of urbanization is the highest in the year of 2011, which is about 12.01%. In 1981, the level of urbanization in this upazilla was about 6.34%. At the present time, the level of urbanization is increasing because of some facilities such as improvement in communication and health facilities, educational facilities, etc. However in the year of 1981 it was only about 6.34%.



Graph 2.1 – Level of urbanization in Muktagacha upazilla  
(Source: BBS report, (2001 & 2011))

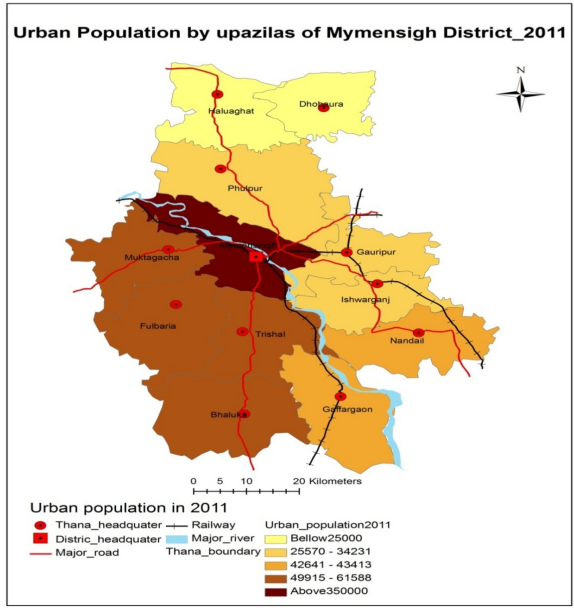
### *Increase of urban population in Muktagachha Upazilla*

From the following graph it can be seen that the number of urban population in this upazilla is sloping upward. According to the preliminary census of 2011, the number of the total urban population of this upazilla is about 49,915. It was only about 16,292 in the year of 1981. During the period 1991-2001 the decadal growth rate of this upazilla was about 62.36% and the annual growth rate was about 4.97%.



Graph 2.2 – Growth of urban population in Muktagachha upazilla  
(Source: BBS report (2001 & 2011))

The following map shows urban population of different upazilas in Mymensingh District. From the map it can be seen that the number of urban population ranges between 49,915 and 61,588. It comes after the highest population number (Mymensingh Sadar – above 350,000). The number of urban population is increasing in the town area of Muktagachha upazilla day by day as public facilities in the town area are much more present than in other areas. Therefore, population density in this area is becoming high and it leads to various urban problems.



Map 2.3 – Urban population in Muktagachha upazila

**Urbanization process**

Muktagachha paurashava is the only urban area of this upazila. According to the census of 2001, it consists of 9 wards and 21 mahallas, occupying an area of 11.97 square kilometers. The brief description of Muktagachha paurashava is given below. The Muktagachha paurashava was established in the year of 1875. The Muktagachha town committee was replaced by the paurashava after the promulgation of the Bangladesh local council and municipal committee (amendment) order in 1972. Muktagachha paurashava is one of the oldest paurashavas of Mymensingh District. It covers an area of 11.97 square kilometres, having a population of 49,915 according to the preliminary census report of 2011. There are about 20 educational institutions, 428 mosques, 28 temples, 3 churches, 4 cinema halls, 1 library, 3 playgrounds, 5 dak bungalows and 1 post office in this paurashava. This paurashava falls under the category of “B” class.

Table 2.2 – Changing pattern of Muktagacha Paurashava

Events	1981	1991	2001	2011
Population (both sexes)	1,629,2	2,043,4	3,776	4,991,5
Male	8,574	1,078,7	1,945,7	-
Female	7,718	9,650	1,830,5	-
Literacy rate (7+ year)	-	46.3%	48.0%	-

(Source: BBS report, (2001 & 2011))

### *Industries*

There are 15 biscuit factories, 12 oil mills, 3 presses, 16 saw mills, 221 rice mills, 2 bidi factories and 12 dairy products (ghee) factories in this upazila.

### *Main sources of income*

Although agriculture is the main occupation here, at present non-agricultural sectors are increasing. The percentage of these sectors is the following: agriculture – 59.26%, non-agriculture – 4.61%, industry – 1.13%, commerce – 11.29%, transport and communication – 6.32%, service – 4.96%, construction – 1.35%, religious service – 0.22%, rent and remittance – 0.28% and others – 10.58%.

### *Cultural activities*

Muktagacha has always been the place to nourish various cultural activities. The Zamindars of Muktagacha were always conscious of cultural activities. Raja Jagat Kishore Acharya Choudhury was the true patron of culture. He brought famous cultural people like Ustad Allauddin Khan, Hafiz Ali Khan, Dabir Khan and many others to Muktagachha. A lot of people directly nourish the field of culture. People here practice Rabin-dra Sangeet, Nazrul Sangeet, Kirtan, Lalon Geeti, etc. In addition, various cultural activities are held all year round.

### *Religious activities & religious institutions*

Muktagachha has a long tradition of being the peaceful land decorated with religious harmony. Both the Hindus and Muslims are of brotherly nature and live peacefully together. Eid is celebrated with a lot of grandeur. On this day, not only the Muslims do visit each other's home, but the Hindus visit Muslims, as well. People share many food items made at home. Many fairs locally called Mela are organized. "Durgapuja" is the main religious function of the Hindu community here. During "Durgapuja" the whole town takes a festive look. People of all communities enjoy "Durgapuja". Devotees go from one Man-



dap to other to visit the Pratima of Goddess Durga. Besides this, all other religious activities are peacefully observed. There is a 200 year old twin Shiva temple just outside Rajbari, where Durgapuja is celebrated. There are many religious institutions here since different religious groups of people live here. People of different religions live peacefully and cooperate with each other. The table on the following shows information of religious institutions.

Table 2.3 – Number of religious institutions

ID	Description	Number/amount enumerated by pouro authority	Number/amount from banglapedia
1	Eidgah field	07	--
2	Mosque	580	521
3	Mandir	16	22
4	Church	--	5
5	Cemetery	04	5
6	Crematorium	02	--

(Source: www.muktagachapourashava.org and www.banglapedia.org)

## An overview of urban services in Muktagachha town

As it is already known, urban services are those that are provided by the government to the people within its jurisdiction, either directly (through the public sector) or by financing provision of services. The term is associated with a social consensus that certain services should be available to all, regardless of income. Generally, services that are provided by the government in urban areas are more or less available. However, since Bangladesh is a developing country and the most populous country in the world, the government of this country faces problems in providing services to its inhabitants. We know that people move to urban areas for various reasons, but among all of the reasons urban pull factor and rural push factor are important. People come more to Muktagachha town because of the availability of urban services, so the rate of people migrating here is increasing. In this section an overview of urban services and their present condition will be discussed.

### List of urban services

Urban service areas are those areas in and around the existing communities, which are most suitable for urban development and capable of providing a full range of urban services. The urban service area boundaries represent the outer limits of planned urban growth over a long-term planning period. The people of Muktagachha town have enjoyed some urban service facilities. A list of these facilities is given below: electricity supply, water supply, waste management, drainage & sewerage facilities, health facilities, recreational facilities, transportation & communication facilities, infrastructural facilities (road, bridge or culvert, lamp post), market and shop facilities, facilities in slum areas, Internet service, telecommunications, etc.

## Present scenario of urban services

The development of urban services in Muktagachha town depends on economic development of the main center of Mymensingh District (sadar). This town has not seen the expected development as there is no development program in Mymensingh main town since the independence of Bangladesh in 1971. The construction of garment industries, multi-storey and commercial buildings is still limited in number here. Rickshaw is the main mode of transportation within this area and growth of the number of cars is sluggish. Modern shopping malls and well-furnished residential hotels are also less in number. However, at present there are more development programs here and also the supply of urban services is increasing in the main city of Mymensingh Sadar. Urban services in Muktagachha town are also increasing as spider net from the core. Since this area is so close to the main sadar area, people are willing to stay here and work as commuters from Muktagachha town to the main area of Mymensingh District. Therefore, urban facilities here are being improved. The present situation of urban services is discussed in the following section.

## Electricity supply

Electricity is the most important part of modern civilization. It is significant for socio-economic development, as well as for modern life. It is one of those discoveries that have changed the daily life of everybody on the planet. It is the key component to modern technology and without it most of the things that we use every day simply could not work and would never be created. Indeed, modern society would be incredibly different. Imagine how different things would be today without the Internet. The World Wide Web (WWW) has had a huge effect on our lives. It has made everybody more aware of the world they live in, and it has allowed them to learn about our surroundings and know more about how near enough everything within modern society works. It is our gateway to knowledge, and it allows us to find out nearly anything within a matter of seconds, hence electricity has made us an incredibly intelligent and aware society. There is no power generation station in Muktagachha town. Here electricity comes from the national grid. For the purpose of socio-economic development of the inhabitants of Muktagachha town and to have happy life Mymensingh Rural Electrification Committee-1 started its activities, as well as services in 1984. Until June 2014 it has spread its territory to 512 kilometres (approximately), which covers 1,710,922 receivers and creates opportunities to 1,600,570 people. It also helps in agricultural development, industrial development and employment opportunities to most of the rural people in this area. According to Banglapedia "All the wards and unions of the upazilla are under rural electrification network. However, 21.49% of the dwelling households have access to electricity." According to the director of the Committee, "Rural Electrification Committee cannot generate electricity for its own needs. It can rather get electricity supply from the national power grid. With the earnest efforts of the Government, load shedding in this area is very little in amount. Sometimes faulty in the electricity line & for repairing supply of electricity kept stop. We are extremely sorry for this short-term disturbance and hope that the recipient has to be patient and should cooperate with us." "Mymensingh Rural Electrification

Committee buys electricity at immediate price from PDB and then distributes it to the recipients. Therefore, electricity bill is the main source of income of this Committee. If the electricity bill is not paid the Committee faces problems. Also, the number of cases of stealing electric wires and transformers has recently increased. Therefore, the recipients and also the Committee face serious problems. Thus, we request our receivers to cooperate with us in order to stop stealing”, he also said.

## Water supply

Water is the vital element in life. With two thirds of the earth's surface covered by water and the human body consisting of 75 percent of it, it is obvious that water is one of the prime elements responsible for life on the earth. Water circulates through the land just as it does through the human body, transporting, dissolving and replenishing nutrients and organic matter while carrying away waste material. Further in the body, it regulates the activities of fluids, tissues, cells, lymph, blood and glandular secretions. Water supply in this upazila by water supply authority is a recent phenomenon. Most of the inhabitants, who live here, said that they have personal motor for water supply to their house. Some people do not have personal motor and they use supply water from the authority or personal tube well. Most of the people who use supply water said that it fulfilled their water demand. They do not face water scarcity. However, if some bad situation occurs (load shedding for a long time) then people have to face many problems because they cannot get much water. In their annual survey report in 2012 the pouro authority showed that it had established productive tube well (normal pump, submersible pump) and manual tube well in various areas of this upazila from time to time to meet water demand of the inhabitants. The following table shows statistics on water supply system in this area.

Table 3.2 – Statistics on Water supply (pipeline 19.491 km)

ID	Productive tube well					Manual tube well
	Type	Size	Year of establishment	Depth (meter)	Productive capacity (m3/hour)	
1	Normal pump (KSB)	6 ft	1995	580	571.48	394
2	Normal pump (KSB)	6 ft	1996	560	571.48	
3	Submersible	3 ft	2011	350	350.00	

(Source: Information desk, Muktagachha pouroshova, 2014)

The pouro authority said that if anyone would like to get connection of supply water whether it is residential or commercial, first they have to apply to the mayor of the pouroshova in a prescribed form. They have to mention what type of diameter line they want. They have to pay fee for the first time connection. The amount of fee depends on the distance from the user to the source of water or reservoir. The following table shows statistics on water supply in this upazilla. It shows that there is 1 high reservoir here. This reservoir is located in Moddhohishsha area. From this reservoir water is supplied to all recipients

(residential & commercial). The table also shows daily demand for water, duration of water supply, amount of daily water supply, leakage and repair of line from 2009-2012, total population under water supply, water supply coverage and other important data.

Table 3.4 – Information about water supply system until 2012

ID	Description	Units	Number/amount/condition	
1	High reservoir	Number	01	
2	Water supply	Hour	7 hours	
3	Daily demand for water	Cubic meter	4976.40	
4	Daily water supply	Cubic meter	1492.96	
5	Leakage repair in previous years	2009	Number	13
		2010	Number	10
		2011	Number	12
		2012	Number	07
6	Total street high drain in pouro area	Number	22	
7	Total population under water supply	Number	4737	
8	Water coverage	%	30%	
9	Presence of arsenic in water	Yes/no	0.004 mg/l	
10	Presence of iron in water	Yes	1.08 mg/l	
11	Water metering system	Yes/no	No	

(Source: Information desk, Muktagachha pouroushova, 2014)

## Health facilities and sanitation system

Health and sanitation facilities are very important to lead healthy and secure life. In Muktagachha the authority tries to improve the quality of health care services. There is one upazilla health care center here. According to Banglapedia report, the number of health care centers is described in the following table.

Table 3.5 – Number of health care centers in Muktagachha

ID	Description	Number
1	Upazilla health complex	1
2	Satellite clinic	4
3	Hospital	1
4	Community clinic	27
5	Family planning center	6
6	Veterinary hospital	1

(Source: www.en.banglapedia.org)

The table on the following shows the existing health facilities enumerated by the upazila health complex. This table shows that there is 1 upazila health complex with 31 beds, 4 union sub centers with no bed, 6 union health and family welfare centers and also data on other health facilities. This table also shows that the number of private and community clinics is great here, too. Furthermore, some of the owners of these private hospitals claim that the facilities of private clinics are increasing to a great extent.

Table 3.6 – *The existing health facilities enumerated by the upazilla health complex (modified)*

ID	Facility type	Total No.	No. of Beds
1	Number of upazilla health complex	1	31
2	Number of Union Sub-centers	4	0
3	Number of union health & family welfare centers	6	0
4	Number of rural/urban/Thana dispensaries	0	0
5	Number of community clinics	39	0
6	Number of trauma centers	0	0
7	Number of chest disease clinics (TB clinics)	0	0
8	Number of NGO clinics/facilities	0	0
9	Number of MCWCs	0	0

Source: app.dghs.gov.bd

The following graph shows the child health that is enumerated by the upazilla health complex. The graph shows that children under 5 years of age are more vulnerable to death calculated as 436. In order to enumerate child health, the upazilla health complex authority took into consideration the data on children from January-December 2013. The total birth rate here at this time is 9063, whereas the percent of fully vaccinated children is 96%.

The following table represents maternal health, which came to this health complex in January-December 2013. It shows that during the mentioned time period the total number of all ANC recipients was 9030, the total number of deliveries here was 9104, whereas the total number of maternal death was 18 and TT coverage 26%. Generally, the poor people of rural Muktagachha seem to come here and use health services. Rich people prefer to go to Mymensingh Sadar and get better health facilities.

Table 3.7 – *Maternal Health January-December 2013 enumerated by Upazilla health complex (modified)*

ID	Description	Number
1	All ANC recipients	9030
2	Total number of deliveries	9104
3	Number of maternal death	18
4	Valid TT coverage	26.00%

(Source: app.dghs.gov.bd)

According to the statistical report of Muktagachha Upazilla on health services, it has been seen that there is one upazilla health complex and its present condition is good. Private clinics have also been established in a large number in this area. Thus, it can be seen that the overall health facilities in this upazilla are not bad and the pouro authority, as well as the private sectors, are trying to improve health facilities here.

Table 3.8 – *Number of health care centers counted by pourashova*

ID	Description	Number/amount	Present condition
1	Number of EPI centers	--	--
2	Hospital guided by pourashava	01	Good
3	Clinic guided by pourashava	--	--
4	Number of govt. hospital	01	Good
5	Private clinic	12	--

Sanitation is equally important as health facilities. If there is a good sanitation system then people will lead life free from diseases. However, being a developing country, our sanitation system is not good. Most of the people in rural Bangladesh areas do not have proper sanitation system. There is an attempt to improve sanitation facilities. For this purpose they have constructed public toilets in different places in this area. The following table shows statistics on sanitation and types of toilets in this area. The statistics was conducted by the pouro authority in 2012.

Table 3.9 – Sanitation facilities enumerated by the pouro authority

ID	Description	Number/amount	Situation
1	Public toilet	07	Good
2	Community toilet	20	Good
3	Septic tank & toilet with septic tank	1870	Good
4	Open toilet	1607	

(Source: Information desk, Muktagachha pouroshova, 2014)

According to Banglapedia report on Muktagachha, it says that 27.16% (rural – 24.28% and urban – 53.93%) of dwelling households of the upazilla use sanitary latrines, 37.37% (rural – 38.52% and urban – 26.70%) of dwelling households use non-sanitary latrines whereas 35.46% of households do not have latrine facilities.

## Waste disposal & management system

According to Wikipedia, “Waste management is the generation, prevention, characterization, monitoring, treatment, handling, reuse and residual disposition of solid wastes”. There are various types of solid waste including municipal (residential, institutional, commercial), agricultural and special (health care, household hazardous wastes, sewage sludge). The term usually relates to materials produced by human activity, and the process is generally undertaken to reduce their effects on health, the environment or aesthetics.

According to the pouro authority of Muktagachha town, they are working hard to minimize waste and they are also trying hard to maintain the secure environment. For this purpose they engage the huge number of cleaners to collect waste from dustbins in various areas and dispose them to the waste disposal ground. However, the authority said that there was no recycling process presented here. They only dispose garbage here after collecting it from dustbins constructed by the pouro authority. The following table shows waste disposal system in this area.

Table 3.11 – Statistics on waste disposal & management system until 2012 (modified)

ID	Description	Number, area, amount etc	
1	Number of garbage truck	1.5 ton	1
		3.0 ton	1
		5.0 ton	-
2	Number of dustbin	17	

ID	Description	Number, area, amount etc
3	Number of transfer station	-
4	Area of solid waste disposal ground	0.10 acre
5	Total production of garbage	12.65 ton (every day)
6	Total collection of garbage	10.50 ton (every day)
7	Door to door waste collection	No
8	Number of cleaner	69
9	Total cost in this sector in 2010-11 FY	2362574.00 tk.
10	Production of fertilizer from garbage & amount	No
11	Production of biogas from garbage & number of household using this	No

(Source: Information desk, Muktagachha pouroshova, 2014)

The pouro officials answered to the researcher that this survey was conducted in 2012. Since no survey was conducted, they could not tell the exact figure on waste disposal. However, they also said that there should not be much difference between the present situation of waste disposal and in the year of 2012. The photograph on the following shows open space garbage disposal from residence. This causes environmental pollution.

## Drainage & sewerage system

Drainage and sewerage are important to wash out waste materials from the residence and commercial areas. In this area drainage system is not good at all. The pouro authority tries to improve the condition. Most of the inhabitants say that drains are not cleaned properly and the workers are not conscious of this. The following table shows data on drainage & sewerage system, which were collected in 2012. The officials said that drains showed in the table in need to be repaired have already been repaired and also more workers have been employed for cleaning purposes.

Table 3.12 – Statistics on drainage & sewerage system until 2012 (modified)

ID	Type	Length (km)	Condition of Drainage system	
			Need to repair	No need to repair
1	Brick drain	17.167	14.167	3.00
2	RCC drain	12.44	-	12.44
3	Primary Khal/ drain	5.91	5.91	-
4	Katcha drain	23.51	23.51	-
Total		59.027	43.587	15.44

(Source: Information desk, Muktagachha pouroshova, 2014)

The photograph on the following shows the quality of drainage system in this area. The common feature here is that drains are unclean and uncovered.

## Literacy & educational institutions

As we all know, education is the backbone of a nation. Without education no nation can develop and go forward. In our country literacy rate is not so good. However, the recent government is trying hard to improve literacy rate. According to Banglapedia report on Muktagachha, literacy and educational information is the following: average literacy - 35.3% (male - 38.4%, female 32.2%); educational institutions: college-10, secondary school - 42, primary school - 144, regional scout training centre - 1, regional cooperative institute - 1, madrasa - 52. The noted educational institutions are: Ram Kishore High School (1300), Nagendra Narayan Primary School (1907), Kheruajani High School (1899) and MN Pilot Girls' High School (1907).

Parents of the children in this area are much more anxious about the study. At present, competition in schools is getting high. Nowadays, one can see every day morning picture of students going to private tutor houses or coaching centers. The two photographs on the following indicate that a mentally disabled school is located in this town. There is only one type of this school here. There are thousands of disabled children in this area. Most of the families are poor and lead miserable life. In order to educate disabled children, a disabled school called "Shopno Kuri" was established here in 2011. It is the only school for disabled children. The school started its work with 400 students. It is located in Aatani bazaar road of this town. Teachers work hard to educate them. Besides education, vocational training is given to students here to develop their livelihood. Parents of one mentally disabled child told the researcher: *"My child is mentally disabled. Before the establishment of this school I really felt bad when I saw children going to school with bags on their shoulders except my child. However, after the establishment of this school, all parents of disabled children and me too are happy. My child learnt many things and he can express his emotions, which I could not do alone. I am really grateful to Shopno Kuri School and teachers of this school."* The following table shows information about educational institutions in this area. The pouro authority said that present conditions of these educational institutions are good. There is no university here. Students are seen going to Dhaka, Mymensingh Sadar or other parts of the country to get higher education. There is one public library guided by the pouroshova. However, at present some public libraries are established with personal assistance. This helps to enhance education, as well as general knowledge of people.

Table 3.13 – Information about educational institutions until 2012 (modified)

ID	Description	Number/amount	Present condition
1	Primary school guided by pourashova	--	--
2	High school guided by pourashova	--	--
3	College/university guided by pourashova	--	--
4	Total primary school (govt-non govt.)	12	Good
5	Total high school (govt.-non govt.)	05	Good
6	Number of school & college	10	Good
7	Number of college	05	Good
8	Number of university	--	--
9	Number of medical college	--	--
10	Number of Madrasha	02	Good
11	Kawmi Madrasha	05	Medium
12	Number of library	01	Good
13	Number of disabled school	01	Good

(Source: Information desk, Muktagachha pouroshova, 2014)



## Road & communication facilities

The town is well connected by a road network. However, most of the streets are narrow and driving a car is difficult. The highway that runs across Muktagachha town connects the main town of Muktagachha with the northern and eastern parts of Bangladesh. Muktagachha is called the gateway of Mymensingh District. Roads of the city are owned and maintained by the Pourashava. The pouro authority tries hard to improve the quality of roads. However, the condition of feeder roads is not so good.. For intra connection to the town people use CNG vehicle with two - stroke engine, rickshaw, van, etc. Van is popularly used in rural areas, but it is also used in town areas because of its low costs. The link with Dhaka was established around 1865 with the laying of railway lines. At that time people had to go to Mymensingh town in order to go to Dhaka. The road link went via Tangail until 1979 when President Ziaur Rahman instructed that the half-finished new highway between Dhaka and Mymensingh via Bhaluka be opened. The distance from Dhaka to Mymensingh is about 120 km (75 mi) north from the Mohakhali bus stop. Nowadays, journey by bus is very comfortable because of some good quality bus services. Muktagachha has its own bus service connected to Dhaka. Generally, it is about 2.30 to 3 hour journey from Dhaka to Muktagachha, though it may take little more time depending upon traffic jams and other conditions of the road. The Dhaka-Mymensingh highway is one of the busiest highways of the country. Moreover, due to recent land development there has been an increase in traffic. The pavement conditions have improved in recent years. During June-July, which is the season of jackfruit ripening, the overall travel time may be longer because of vendors selling jackfruit in Mauna, Seed Store, and Bhaluka. The bus fare always changes depending upon the fuel price. According to Banglapedia report, there is 100 km pucca road, 11 km semi-pucca road and 742.15 km mud road. The table on the following presents statistics on road conducted by the pouro authority. The table indicates that there is the total of 35.50 km of carpeting road, but it is not in a good condition. Katcha road is 40.68 km and it is in medium and bad condition.

Table 3.14 – Statistics on road condition until 2012 (modified)

ID	Type	Length (km)	Condition of roads (length of road)		
			good	medium	bad
1	Carpeting	35.50	-	20.00	15.50
2	H.B.B	1.25	-	-	1.25
3	Soling	-	-	-	-
4	CC/RCC	7.00	-	4.00	3.00
5	WBM	0.50	-	-	0.50
6	Katcha	40.68	-	13.60	27.08
7	Others		-	-	-
Total		84.93	-	37.60	47.33

(Source: Information desk, Muktagachha pouroshova, 2014)

The following table shows the number of bridges and culvert. The total number of bridges here is 33 including 22, which should be repaired. Furthermore, there are 64 culverts including 34, which should be repaired.

Table 3.15 – *Statistics on bridge and culvert until 2012 (modified)*

ID	Description	Number	Length (km)	No need to repair
1	Number of bridges	33	150	22
2	Number of culvert	64	80	34
	Total	97	230	56

(Source: Source: Information desk, Muktagachha pouroshova, 2014)

## Gas facilities

Muktagachha town was connected to national gas distribution network in 2005. However, most people still use kerosene stove or firewood oven. Also, many kitchens run on liquefied petroleum gas available in steel bottles.

## Newspapers & periodicals

Besides national dailies there is a good circulation of local newspapers and periodicals. They are weekly- Aloran Barta, fortnightly - Sabar Katha and periodical - Sonali Sis. The defunct ones are Promodi, Surid, Nirmallah, Desher Khabar, Muktakantha and Ajker Muktagachha.

## Internet facilities

At present, the importance of the Internet cannot be ignored. The main advantage of the Internet is that it has made information available in a quick and easy manner, publicly accessible and within easy reach. It has revolutionized communications and social networking, creating the zone, which was so international that a new law had to be introduced to govern it.

People communicate, share data and work on the Internet all day, every day, without realizing that it is completely decentralized. The Internet plays a great role in removing the borders between nations, and it assists in the process of globalization. In a matter of seconds we can communicate with people around the world, whether for important business matters or just talking to friends. The Internet service in this upazilla is a recent phenomenon. People in this area do not exactly know when the Internet service started in this area. However, in 2003 GP Internet service was initiated here. BTCL started its journey in 2007. At present, many cyber centers are seen here. They offer computer training programs, network browsing and other computer training programs.

## Post office

The upazilla post office is located near Muktagachha thana. Most of the respondents said that it was established a long time ago. However, nobody including the officials in this sector could name the exact year of its establishment. Some say that it was estab-

lished on 1<sup>st</sup> April 1933 whereas some others say that it was established on 1<sup>st</sup> May. The postal code of Muktagachha is 2210. Since this is the age of modern technology and nowadays most of the communication is performed through the Internet, mobile phone and other devices, the activities of post office have been slowed down. Yet, every day lots of official letters, foreign activities and postal orders are performed through this.

## Market & bazaar facilities

There are 18 hats and bazaars, and 5 fairs. The most noted ones are Dorichari Ani Bazar, Raghunathpur (Rouarchar) Hat, Chechua Hat, Gabtali Hat, Dropour Hat, Kutubpur Shivaratri Mela, Ramchandrapur Mela, Lakshmikhola Mela, Sapanna Prahar Mela.

## Entertainment facilities

Entertainment facilities here are not sufficient. There is playground, cinema hall, udan, auditorium and jamindar bari here. However, the facilities are very poor.

## Land utilization and town planning

Since in Muktagachha town urbanization process is gradually developed, town planning is very important. Therefore, the pouro authority made statistical report of land utilization of this area. The following table shows that the land of Muktagachha is utilized for residential, commercial, road and communication, wetlands, entertainment, institution, industry, agriculture, open space and other purposes. The rate of utilization is also indicated here. The conclusion from the table is that the land is mostly used for residential purposes. Having in mind rapid urbanization trend here the pouro authority requests people to build their houses and other infrastructure in a planned way.

Table 3.16 – Land utilization and town planning data of the total land of 1747.46 ha

ID	Description	Amount (hector)	Rate of use (%)
1	Residential	561.63	32.14
2	Commercial	12.98	0.74
3	Road/communication	38.39	2.02
4	Wetlands	186.85	10.69
5	Entertainment	1.09	0.06
6	Institute	12.51	0.72
7	Industry	7.38	0.42
8	Agricultural area	635.39	36.36
9	Open space	279.54	16.00
10	Others	11.70	0.85

(Source: Information desk, Muktagachha pouroshova, 2014)

## Urban problems and its solution in Muktagachha town

As we all know, urbanization is the inevitable destiny of the human civilization. However, in developing countries the process of urbanization faces many problems. Most of the time proper urbanization planning is not seen. Bangladesh is not exception to this situation. Mismanagement is present here from divisional sector to the local union porishad sector. In this section an analysis of the urban services and problems that the people of Muktagachha face will be discussed.

### Analysis from the findings

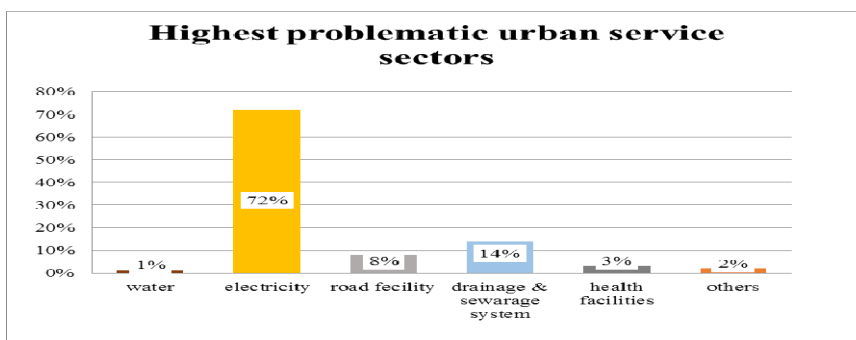
From the field survey and after analyzing urban services that people of Muktagachha get, it has been found that 82% of the respondents answered that they faced many problems in getting urban services and 18% of the respondents said that they did not face many problems. They also said that although they did not face many problems still they experienced some problems to get some services.

Table 4.1 – Problems in getting urban services

ID	Frequency	Percentage
Yes	82	82%
No	18	18%
Total	100	100%

(Source: Field survey, 2014)

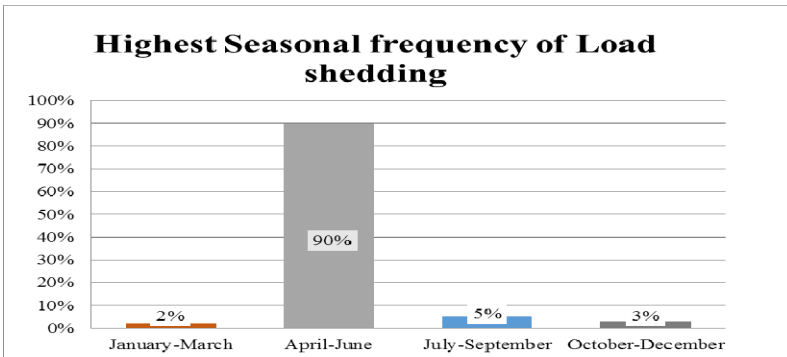
Most of the respondents (72%) said that they faced a great problem in getting electricity facility. They said that it took long time to get connection. Also, load shedding is a major factor of this problem. Then drainage & sewerage system comes. 14% of the respondents said that they faced problems because of poor drainage & sewerage management system. 8% said that road and communication system was not good enough. 3% said that they did not get proper health facilities. Only 1% of people said that water crisis is their main problem. However, it is well understood that electricity problem is the main problem here.



Graph 4.1 – Highest problematic urban service sectors  
(Source: Field survey, 2014)

## Status of electricity supply

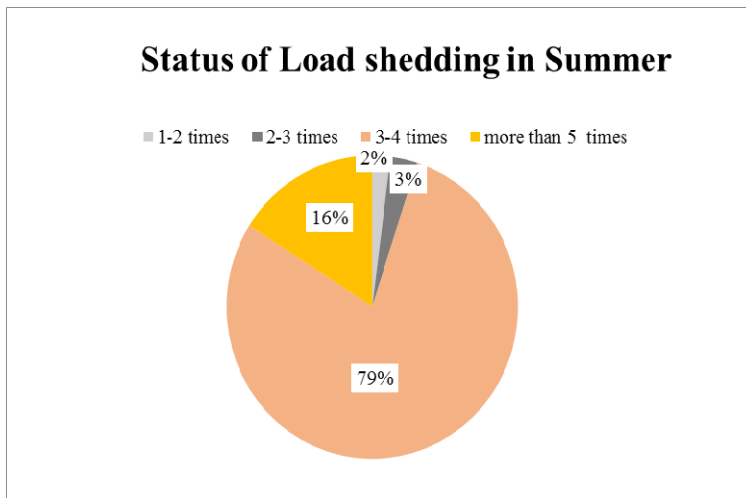
As we have already learned, people of this area are supplied with electricity by the Rural Electrification Committee and the director said that electricity fall is coming down to zero. However, the respondents said different things. They said that load shedding is like a perpetual event in their life. Most of them said that every morning from 6.30-7.30 am load shedding occurs. It also occurs in the evening lasting from 30 minutes to an hour. One of the respondents said: *“If there is no load shedding a whole day then we think what’s going on today! Do the officials forget about electricity out?”* However, the secretary of the Rural Electrification Committee said that they would not stop the supply. Only if there is an unexpected situation like blasting of transformer, repairing of electric line, giving new connection during various natural disasters (storm, flood, cyclone, etc.) they are forced to stop supply of electricity to protect the whole system from being destructed (Cvetković, 2016ab; Cvetković & Gačić, 2016; Cvetković, Gačić & Jakovljević, 2016; Cvetković, 2017; Cvetković, Gačić & Babić, 2017; Cvetković, Lipovac & Milojković, 2016). From the analysis it has been found that there is a difference between summer and winter load shedding type. Since these two seasons are more specific than other seasons in Bangladesh the researcher put emphasis on these two seasons. Load shedding in summer is more frequent than in winter. In our country, generally, summer season starts from the month of April and it lasts until August, sometimes until September, too. The following graph shows the highest seasonal frequency of load shedding in this area. The graph says that 90% of the respondents answered there is the highest frequency of load shedding from April-June. Some of them said that at this time electricity went out at least 5-6 times within 30 minutes - 1 hour duration. Later we can see that from July to September the rate of load shedding is 5%, 3% from October to December and 2% from January to March. The lowest frequency of load shedding is from January to March due to winter season. At this time the demand for electricity is not great in amount anymore. Therefore, the authority supplies electricity to people in their desired amount. Yet, load shedding has not entirely vanished!



Graph 4.2 – Highest seasonal frequency of load shedding  
(Source: Field survey, 2014)

## Status of load shedding in summer Season

From the following graph it can be seen that load shedding occurs more in summer season. Most of the respondents (79%) answered that load shedding occurs 3-4 times in this season. 16% of the respondents said that it happens more than 5 times a day! 3% and 2% of the respondents answered that load shedding occurs 2-3 times and 1-2 times respectively.

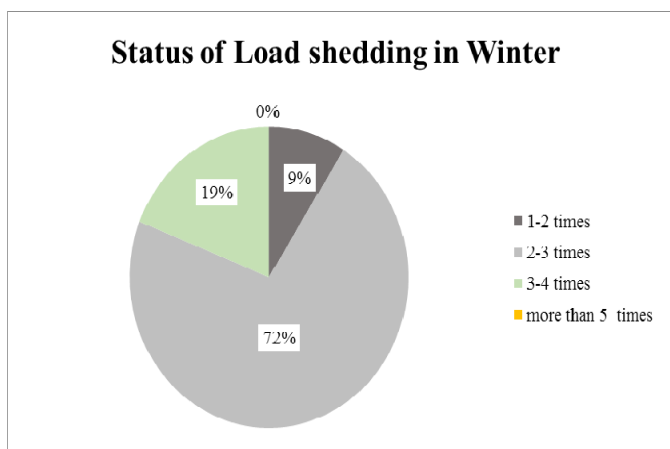


Graph 4.3 – Status of load shedding in summer in Muktagachha town  
(Source: Field survey, 2014)

Some of the respondents found out why load shedding is greatly present in this season. They said that when there is greater demand for electricity more load shedding occurs. They suggested the following reasons: it is summer season and it is much hotter, so people need more electricity to run cooling instruments (fans, refrigerators, air conditioners, etc.). That is why the demand for electricity is greater and more load shedding is necessary; this is the time for paddy cultivation, so the need for irrigation is more present at this time. Irrigation needs more electricity. The authority needs to supply electricity for irrigation. Most of the respondents said that “Every night in summer season, generally from 10-11 p.m. load shedding occurs in residential areas and it lasts at least 2-3 hours or sometimes until bazaar times!”; in summer season storm surges and raining are more frequent phenomena. Therefore, at this time officials of the Rural Electrification Committee stop electricity supply in order to prevent the destruction of supply lines, accidents, etc. Sometimes load shedding lasts from 1 day to several days depending on situation. Some people said that there were major storm surges in this area a year ago, which destroyed many transformers and electricity lines and load shedding lasted for 4 days. This created many problems to people’s life and business, as well.

## Status of load shedding in winter season

Load shedding in winter season is not absent here, although the demand for electricity is not so great anymore. 72% of the respondents answered that load shedding occurs 2-3 times a day and it lasts for ½ - 2 hours a day. The other 19% and 9% of the respondents replied that it occurs 3-4 times and 1-2 times a day respectively. More than five times load shedding occurrence is not seen here as replied by the respondents.



Graph 4.4 – Status of load shedding in winter in Muktagachha town  
(Source: Field survey, 2014)

## Problems in electricity supply

Here are some problems identified by the respondents, which they face in getting electricity supply: electricity bill is much higher than they expected; officials are not conscious of the need to repair electricity lines; frequent load shedding occurs here; electric poles are adjacent to houses, trees and other objects. This may cause accidents if there is any leakage of electric wires; the number of lamp posts is less than the demand and most of the lamp posts do not work. However, the lamp post data from pourashava urges that there is a sufficient amount of lamp posts and it covers several areas.

Table 4.2 – Lamp post data

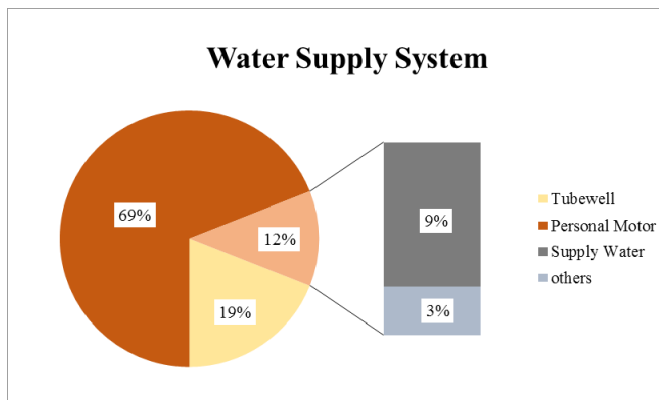
ID	Description	km	Number
1	Number of lamp post & length of road	47.30	860
		51%	
2	Coverage of lamp post (%)	48.40%	

(Source: Information desk, Muktagachha pourashova, 2014)

There are some measures proposed by the respondents that have to be considered to minimize problems of electricity supply. These are: metering and monitoring the use of units. A digital electric meter can help for this; monitoring is necessary to identify leakage of electric wires; people should be aware of using electricity. They should not keep putting on electric materials unnecessarily; people should pay electricity bill timely; everyone should be careful while handling electric instruments to avoid unexpected accidents. Since we already know that inhabitants of this upazilla get electricity from Mymensingh Rural Electrification Committee, if problems occur during transfer of electricity from the national grid to this Committee, then inhabitants face problems like load shedding, too. The photographs on the following indicate location of Mymensingh Rural Electrification Committee-1. It also works as the head office. It provides services to 8 upazillas of Mymensingh (Mymensingh Sadar Upazilla (partially), Muktagachha and Phulbaria) and Tangail (Modhupur, Dhonbari, Gopalpur, Ghatail and Bhuapur) District. We already know this from the previous chapter.

## Present status of water supply

There is a variety of sources of water in this area. People get water from tube well, personal motor, supply water and other sources (from other people's houses). The following graph shows that 69% of the interviewees answered that they get water from personal motor, 19% of people get water from tube well, 9% gets water from supply and 3% from other sources.)



Graph 4.5 – Sources of water supply  
(Source: Field survey, 2014)

It has become clear that the frequency of getting water from personal motor is greater than from other sources. The reason behind this is the fact that people can get water in any amount by a switch on their motor. It is very hard work to get water from tube wells. It makes people tired. Particularly in winter seasons (December-January) it is difficult to get water because water levels go out of the reach. Therefore, at this time people add



extra pipes to the existing tube wells to reach water level. In rainy season water comes to the reach, so at this time they withdraw extra pipes from tube wells. This system is costly and tiresome because this process has to be done every year, that is supply water has to be stored. This work is very tiring to most people. It ensures 100% pure water. It helps to fulfill urgent huge water demand. It reduces uncertainty of supply water. People, who use supply water say that this water fulfills their water demand more or less. However, sometimes they face problems when they have some occasions like wedding or others because in this case they need more water and they cannot get sufficient water. Moreover, when a major disaster occurs and electricity is blown out this creates a problem in getting water. However, the overall water demand of people is fulfilled by this source according to answers of most people. People get water 3 times a day in morning (2 hours), at noon (2 hours) and at night (3 hours). They have to store water. The table on the following shows time and duration of water supply by the pouro authority.

Table 4.3 – Time &amp; duration of water supply

ID	Time	Duration
Morning	6-8 am	2 hours
Noon	12-2 pm	2 hours
Night	5-7.30 pm	3 hours

(Source: Field survey, 2014)

There is difference between monthly payment of residential and commercial water supply. It also depends on diameter of the connection. Statistics on residential water supply conducted by the pouroshova (Table 4.3) indicates that the pouro authority can make the total of 737 connections to its inhabitants including 76 connections that are 13mm (0.5 inches) and they have to pay 75 tk. monthly. There are 651 connections (maximum), which are 19mm (0.75 inches) and they have to pay 110 tk. Furthermore, there are 10 connections, which are 25 mm (1 inch) and they have to pay 200 tk. per month. This statistics was made in 2012. Therefore, the officials say that there may be some changes in the data, but they also say that a tendency to use personal motor is rapidly increasing in this area and sometimes people cut down water supply connections.

Table 4.4 – Total number of residential connection &amp; monthly payment

ID	Diameter of connection	Number of connection	Monthly payment (tk)/thousands
1	13 mm (0.5 inches)	76	75.00
2	19 mm (0.75 inches)	651	110.00
3	25 mm (1 inch)	10	200.00
Total 737			

(Source: Information desk, Muktagachha pouroshova, 2014)

The following table shows that commercial water users have to pay more than residential ones. Commercial water users get more water unlike residential water users. The table indicates that until 2012 the total number of commercial connections was 12. There are 8

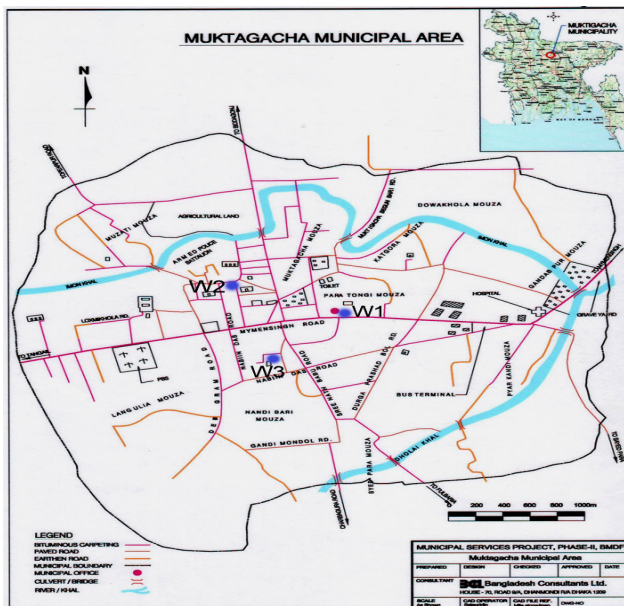
connections, which are 13mm (0.5 inches) and they have to pay 250 tk. monthly. Also, there are 2 connections, which are 19mm (0.75 inches) and they have to pay 450 tk. a month. Also, there are 2 connections, which are 25 mm (1 inch) and they have to pay 750 tk. per month. Actually, at present most of the commercial users have personal motor.

Table 4.5 – Total number of commercial connection & monthly payment

Id	Diameter of connection	Number of connection	Monthly payment (tk)/thousands
1	13 mm (0.5 inches)	8	250.00
2	19 mm (0.75 inches)	2	450.00
3	25 mm (1 inch)	2	750.00
Total 12			

(Source: Information desk, Muktagachha pouroshova, 2014)

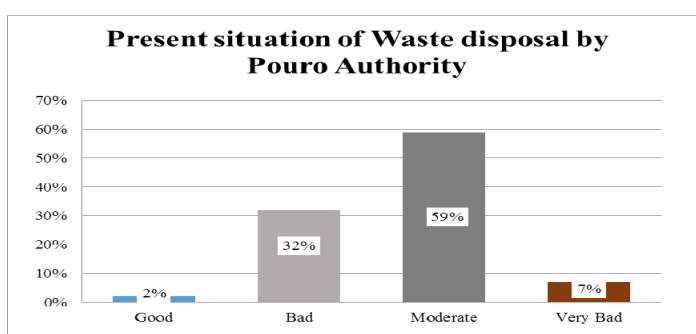
The following map shows the location of water supply pump. These are marked by W1, W2 and W3. W1 represents water supply pump 1. It is located in the pouroshova compound. The foundation stone of this water supply was installed on 8<sup>th</sup> March 1995. Due to the increasing number of people and huge demand for water the pouro authority installed other two water supply pumps. W2 or water supply pump 2 is located on Moddhohishha road of Muktagachha municipal area. It was installed on 22<sup>nd</sup> April 1996. W3 represents water supply pump 3. It is the last water supply pump constructed by the pouro authority. The foundation stone of this pump was installed on 9<sup>th</sup> December 2011. At present, these three pumps can mostly fulfill water demand of people.



Map 4.1 – Location of water supply pump  
(Source: Muktagachha pouroshova.org)

## Status of waste disposal

As we have already found out from the previous chapter, the pouro authority claimed that their workers work conscientiously to collect waste materials and try to make environment clean. There are garbage trucks, which collect waste from dustbins. There is the waste disposal ground here and a garbage truck that disposes waste to this area. There is no waste treatment plant here. The respondents said that medical and industrial waste is also disposed in open space. This poses a threat to the environment and it also creates health hazards.



Graph 4.6 – Present situation of waste disposal by pouro authority  
(Source: Field survey, 2014)

This table presents waste disposal information. 62% of interviewees said that they throw waste materials to vacant areas. A researcher asked them why they do this. One of the respondents answered that *“sometimes dustbins are far from house and sometimes dustbins become too messy to go there and throw waste there. So, we throw waste to vacant areas close to our house. We know that this causes environmental degradation. We will do our best not to dispose waste to vacant areas”*. This table also shows that 12% of people dispose their waste to road sides. This is also a harmful method. 3% of people throw waste to their home yard. Only 23% of people throw waste to dustbins.

Table 4.6 – Waste Disposal System

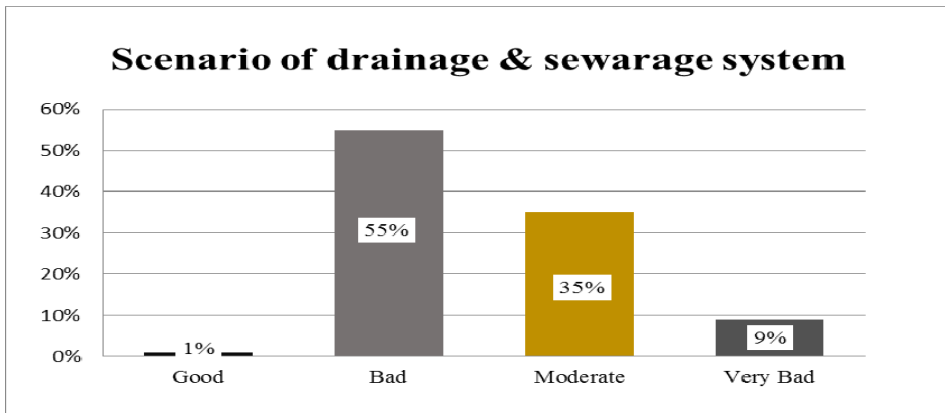
ID	Frequency	Percentage
Home Yard	3	3%
Beside the Road	12	12%
Dustbin	23	23%
Vacant Area	62	62%
Waste collected by pouro Authority	0	0%
Others	0	0%
Total	100	100%

(Source: Field survey, 2014)

Interviewees suggested the following measures to improve waste disposal: waste should be thrown to dustbins, not in open space nor beside the road; garbage treatment plant should be initiated; workers and cleaners have to work sincerely when cleaning dustbins; people have to be conscious of the importance of healthy environment; garbage disposal ground should be made available.

## Status of drainage & sewerage system

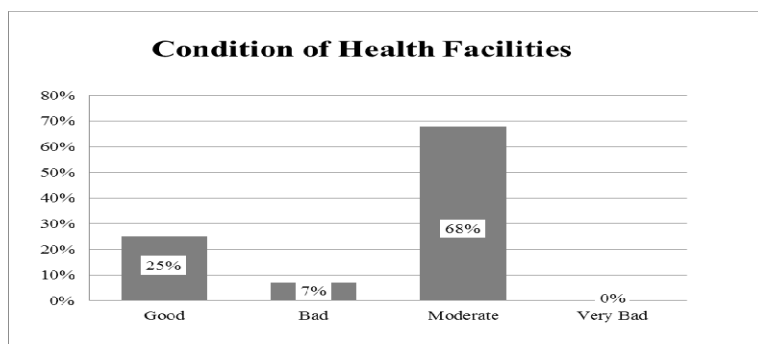
On the one hand, neat and clean drainage and sewerage system ensures good and healthy life. On the other hand, filthy and messy drainage system threatens life. The majority of the developed countries have very good drainage system and citizens lead healthy life and have more urban facilities. Our country is a developing country. Most development activities are not performed in a planned way here. 55% of people here said that the present condition of drainage and sewerage system is bad. Inhabitants face a lot of problems because of poor drainage system. Interviewees have found out some causes of poor drainage sewerage system. They are the following: drains are not cleaned properly and timely; cleaners do not carefully clean drains; sometimes people throw household waste to drains and this blocks the normal flow of water in drains; most drains are in a poor condition and broken in several places. Dirty water overflows the roads; sometimes cleaners pile waste products beside drains after cleaning them. In the rainy season rain water washes this waste to drains and fills up drains. Also, filthy water overflows the surroundings. To overcome this problem the following steps should be taken: drains have to be cleaned timely and properly; cleaners should be sincere; people have to get an idea about bad effects of throwing away waste into drains. This hampers the natural flow of water in drains; broken and old drains have to be repaired.



Graph 4.7 – Scenario of drainage & sewerage system  
(Source: Field survey, 2014)

## Problems in getting health facilities

It is well known that good brings happiness. In Muktagachha town, people get health services from upazilla health complex, as well as private hospitals. 68% of people said that health facilities are in a moderate condition. 25% said they are in a good condition and 7% that they are in a bad condition. None of the respondents answered that they are in a very bad condition. The following graph indicates the present situation of health facilities in this area.



Graph 4.8 – Present situation of health facilities

(Source: Field survey, 2014)

The following table shows travelling distances of health centers from residence. 69% of respondents said that they have health centers in less than 1 km travelling distance. This shows that the availability of health facilities is good. 15% said health centers are located within 1-2 km distance, 12% and 4% of respondents replied they have health centers that are 3-4 km away and more than 4 km away. However, the overall distances are not so long from most of the residences.

Table 4.7 – Distance of nearest health centers

ID	Frequency	Percentage
<1 km	69	69%
1-2 km	15	15%
3-4 km	12	12%
>4 km	4	4%
Total	100	100%

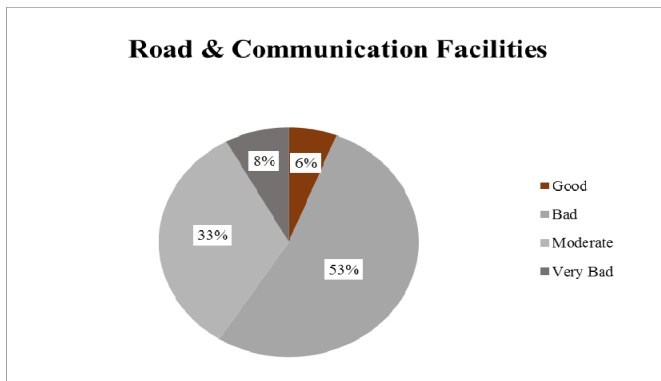
(Source: Field survey, 2014)

Although health centers are not far, people still face some problems in getting health services. Some of the problems of upazilla health complex are discussed below: there are not sufficient ambulances to fulfill emergency needs. Due to unavailability of ambulances, poor people sometimes carry their patients by rickshaws or vans; there is no sufficient amount of oxygen cylinders in upazilla health complex; there are not enough beds; most of the respondents answered that behavior of the officials and workers in upazilla health complex is not good enough. The researcher has also experienced this situation. Surgery room

is not neat and clean; officials are not careful to patients. It could be seen that they use the same syringes. This is very harmful to patients' bodies; poor people do not get medicines that are supposed to be given by the hospital authority because the authority sold medicines to dispensaries. Most of the nurses are not experienced enough. There are other problems of upazilla health complex and in private clinics. The most important problem is that there are not experienced doctors. Also, nurses are not fully educated and experienced. To overcome the existing problems the following measures should be taken as proposed by interviewees: the number of ambulances should be increased, as well as the number of oxygen cylinders. It should be made sure that each person can get an oxygen cylinder at any time when it is necessary; the quality of health facilities has to be improved, as well as behavior of the officials; number of employees should increase and they have to be experienced; the number of beds has to increase; there should be a good quality of medicines; hospital compound should be clean and pollution free.

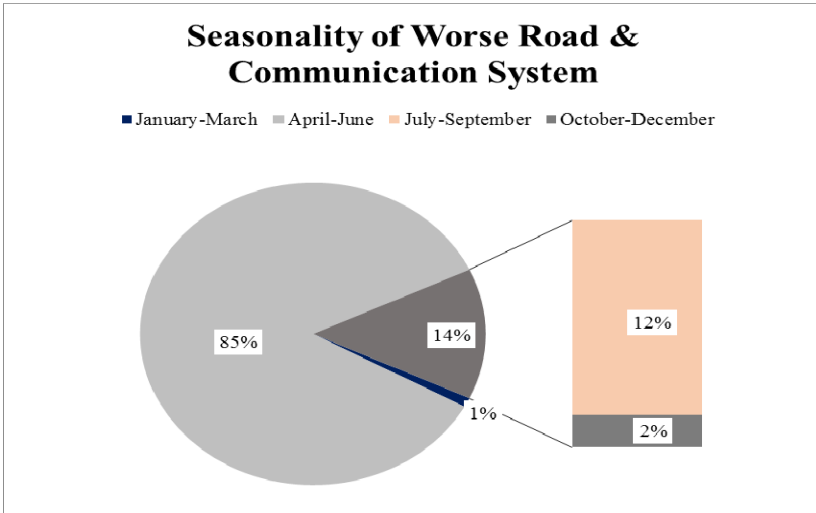
### Present status of road & communication facilities

Good roads and transportation are very important for communication between places. The results obtained from the survey data show that 53% of the interviewees said that the present situation of roads is bad. 33% said it is moderate. 8% and 6% of the respondents said that the condition of roads is very bad and good respectively. The respondents found out some causes of poor road conditions. They are: roads are broken and holes are present in most parts of roads; poor ingredients are used in road construction, and carpeting of roads is done properly; in rainy season there is water on roads, which damages them ; the pouro authority is not aware of the need to maintain roads; roads are narrow and congested; there are lots of vehicles on roads (bus, truck, car, rickshaw, van, CNG, etc.), which causes traffic jam; the condition of feeder roads is even worse; most of the time there is traffic jam on bus stands and it wastes valuable time; the number of speed breakers is great and it causes accidents most of the time. Due to breaking the speed in June 2014 a primary school boy got killed while passing the road at Chhatrashia bazaar road in Muktagachha; there are not enough street lamps and some street lamps are not working at all. This also influences the occurrence of accidents.



Graph 4.9 – Quality of roads & communication system (Source: Field survey, 2014)

Photographs on the following show the existing road conditions. Photographs 1 and 2 indicate miserable road conditions. These are covered with brick and with no carpeting. Photographs 3 & 4 also show the same condition of roads. Photograph 5 is the everyday picture of Muktagachha bus station. This area is always overcrowded and congested and it threatens to have accidents. Graph on the following shows the highest seasonal frequency of worse road and communication system. 85% and 12% of the respondents said that roads become worse in the pre-monsoon and during monsoon period.



Graph 4.10 – Seasonality of worse road & communication system  
(Source: Field survey, 2014)

The interviewees proposed some steps that should be taken to improve road facilities. They are: to use high-quality ingredients for constructing roads; roads should be maintained properly and the pouro authority should be careful; vehicles such as rickshaws, vans, cycles should not be allowed to the highway; roads should be repaired immediately when problems occur; the number of street lamps should be increased; people should be aware while crossing busy roads.

## Gas facilities and their problems

We have already found out that Muktagachha got connected to the national gas distribution network on 3<sup>rd</sup> October 2005. However, the majority of poor people still uses kerosene stove or firewood oven. Some people use liquefied petroleum gas. The majority of liquefied petroleum gas users said that they had applied for gas connection at gas supply office. The following table shows that according to 81% of the respondents gas facilities are available in this area. 19% said that this service is not available to them.

Table 4.8 – Availability of Fuel Gas Facilities

ID	Frequency	Percentage
Yes	81	81%
No	19	19%
Total	100	100%

(Source: Field survey, 2014)

There are some problems in getting gas facilities. They are: it takes long time to get connection; people have to pay more money to get connection for the first time; there is huge corruption in this sector. According to the interviewees, the following measures can be taken to control problems in gas facilities: there should be awareness of usefulness of gas facilities and damages occur due to careless use; people should be careful when using gas; gas stove should not keep burning unnecessarily; wet clothes should not be dried using gas stove.

## Prospects of mosquito killing program

Mosquitoes are generally considered annoying and they may also transmit diseases, thus leading to a variety of human efforts to eradicate or reduce their presence. It bothers people around homes, in parks or recreational areas. Prospects of mosquito killing program are not good in this area. 96% of the interviewees said that no steps are taken by the pouro authority to kill mosquitoes. 4% of people said some measures are taken to control mosquitoes like cutting down brushwood, spreading medicines, cleaning drains, etc., but these measures are taken only one or two times a year. Most of the time people have to do this work on their own.

Table 4.9 – Mosquito killing programme by pouro authority

ID	Frequency	Percentage
Yes	4	4%
No	96	96%
Total	100	100%

(Source: Field survey, 2014)

## Entertainment facilities and their present situation

Entertainment is a very essential element of leading sound and good life. Entertainment facilities in this upazilla are not in a good condition. There are 2 playgrounds, but the present condition of these playgrounds is not so good. There is no shishu park here. There are 4 auditoriums here, but they are in a moderate condition. There are 6 cinema halls, but the majority of the audience is illiterate and the environment of this area is not good. The most remarkable place of Muktagachha is the relics of jamindar bari. Muktagachha jamindar bari is decrepit. At present, due to its appeal as a tourist attraction, the pouro authority has taken repairing program.



Table 4.10 – Information about entertainment facilities (modified)

ID	Description	Number/ amount	Present condition
1	Playground	2	Medium
2	Shishu park	--	
3	Other parks	1	
4	Auditorium	4	Medium
5	Cinema hall/theater	6	
6	Gym	--	
7	Museum	--	
8	Fair place	--	
9	Remarkable place	2	Decrepit

(Source: Information desk, Muktagachha pouroshova, 2014)

The following figures show that 80% of the interviewees said that entertainment facilities are not sufficient to them. 20% said that facilities are more or less sufficient.

Table 4.11 – Entertainment Facilities

ID	Frequency	Percentage
Sufficient	20	20%
Insufficient	80	80%
Total	100	100%

(Source: Field survey, 2014)

## Problems in slum areas

Slums areas are also seen here. Generally, these areas are occupied by poor groups of people. The statistics was collected on slum areas by the pouro authority. They have found out the following characteristics of slums in this area: 50% of households live in katcha and unstable houses; 50% of households are unskilled or poorly skilled in main occupation; densely populated/chaos areas (300 households living in 1 acre area); basic services are insufficient or absent; monthly income per head is 700 tk. or less; houses look alike and are close to each other. The pouroshova and various non - governmental organizations work to improve the quality of life of the poor slum people and give training to them to make them self-sustainable. The following table indicates the location, area and number of households in these slum areas. It has been seen that Reshi para slum has larger area than other slums and it is also inhabited by more people.

Table 4.12 – Statistics on slum areas

ID	Name of slum area	Area (acre)	Number of household
1	Refozi potty	.13	20
2	Pill khana	.81	60
3	Shaba polly	.80	50
4	Reshi para	4.00	100
5	Laxmikhola (near pouro grave yard)	.40	90
6	Sandar potty (Nandibari)	.35	45
7	Payerkandi (porba para)	.50	35

(Source: Information desk, Muktagachha pouroshova)

## Overall findings

On the basis of the discussion on urban services of Muktagachha town, the following overall findings can be drawn: there are problems in electricity supply; load shedding is the main problem. Mymensingh Rural Electrification Board is trying to solve this problem; most people have personal motor to meet their water demand and it ensures maximum pure water supply. It is tiresome work to get water from manual tube wells. There is the uncertainty of water supply by the pouro authority if there is load shedding for couple of days. Water supply does not ensure maximum pure water supply; health centers are not far from the residence. Besides upazilla health complex, a lot of private hospitals have been established. Poor village dwellers come more to upazilla health complex to get health services; people throw waste in dustbins, open spaces, beside the roads and their home yard. The frequency of throwing waste to open space and beside roads is higher. This increases environmental pollution; drains are not in a good condition. They are mostly overflowing. Drains have to be repaired; the present condition of educational system is not bad at all. There is a school for disabled children. Gas supply in this area is sufficient, though people face problems to get connection for the first time. The quality of highway is good, but feeder roads are in a miserable condition. They have to be repaired. There is a good circulation of national, as well as local newspapers and periodicals. There is a public library in this area. It will help enhance knowledge of people and students. The Internet facilities are made available with the improved service including some wireless network systems such as Grameenphone, 3G teletalk, citycell zoom ultra-package, which are remarkable. Broad band connections are also available here. The activities of post office are now decreasing due to technological advancement. There is a number of hats and bazaars here. However, the environmental quality of these areas is not good. Most bazaars are situated beside the highway. It causes traffic jam. Entertainment facilities are not sufficient in number. Some initiatives have been taken by governmental organizations and private sectors to improve entertainment facilities.

## Conclusion

Having in mind everything discussed, it can be said that Bangladesh is one of the world's most densely populated country. Furthermore, it has faced rapid population growth throughout the last century, although the population growth rate has somewhat decreased to a moderate level in recent times. At present, the expansion of urban population and urban construction have been so alarming that urban safety has become the crucial issue in Bangladesh. According to the recent UN data, approximately 25 percent of Bangladesh population currently lives in urban areas. Although it is the small and not well - developed urban center, Muktagachha has also become overcrowded and the quality of urban facilities there is also deteriorating. Due to this, normal functioning of people is interrupted. Therefore, these problems should have special consideration at policy and program making level. The problems have to be eliminated by the collective approach of the Government, as well as non-governmental initiatives, where the need and expectation of people

will get maximum priority. There should be proper planning by the pouro authority and the officials should be conscious of their duty. Social workers as the intellectuals of these sectors can play a vital role here by taking humanitarian issues first.

## Recommendation

After evaluating all of the findings in this study, the following general recommendations can be made: electricity supply should be provided to all inhabitants of this area without any disturbance, and illegal connection should be strictly handled; water supply system should be improved, and the good quality of water guaranteed to all inhabitants; health services at upazilla health complex should be improved. Experienced doctors and nurses should be employed. Private hospitals should be given approval by the pouro authority after proper evaluation. There should be enough dustbins for waste disposal. Dustbins should be cleaned properly. People have to be aware of not throwing waste in open spaces. There should be garbage disposal treatment plant. The quality of drainage and sewerage system should be improved. Old and broken drains should be repaired. People should be encouraged to use toilets, which have septic tank and not to use open spaces. The quality of education has to improve. The number of public libraries should increase, as well as a circulation of books, newspapers, journals, periodicals, etc. There should be ensured easy accessible to all classes of people to meet their queries; An evening school for the old illiterate people can be established to enhance literacy rate. A damaged road should be repaired as soon as possible. Before the beginning of monsoon period roads should be repaired. Drivers should be careful while driving. Also, people should be careful when crossing a busy road. It will reduce the rate of accidents. People should be careful when using gas. Gas stove should not keep burning unnecessarily. Clothes should not dry by using gas stove. People should ensure easy access to the Internet service. For this purpose several WiFi hotspots should be established. The environment of market and bazaar should be enhanced. Entertainment facilities have to be enhanced. More parks are needed. The present decrepit condition of Muktagachha Jamindar bari has to be changed. The pouro authority should make effective planning to improve facilities of urban services. People should be aware of proper utilization of urban services.

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# DISASTER RISK MONITORING IN RISK MANAGEMENT POLICY

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Climate change has been observed in South East Europe (SEE) through higher temperature, changing precipitation and run-off patterns, and extreme weather, leading to reported increasing incidence of weather-induced disasters in many countries of the region such as floods, droughts, wild fires, strong winds, heat and cold waves, etc. As part of climate change adaptation policies and investments, SEE countries have to focus on reduction of their vulnerability and planning measures to mitigate natural disaster risks. This paper presents the implications of climate change resulting in extreme weather and it analyzes the capabilities of Serbia and its business sector to mitigate and manage the impact of extreme events. The main results of desk and field research carried out in 2016 on disaster risk mitigation are given, as well as emergency preparedness and management and reporting practices in the country, manufacturing, finance and insurance enterprises to reduce the current and future vulnerabilities. The methods used are linear regression and statistical tools. Taking into account the projected impact of climate change for SEE and Serbia by the World Bank's studies, the reduction of the current and future vulnerabilities to climate change risk is very important. Since the aim of this paper is to highlight the importance of investing in risk management knowledge and practices of disaster risk monitoring in risk management policy, the research can contribute to the reduction of the weather-related disaster risks, losses and it can initiate necessary actions for climate change.

*Key Words: Disaster Risk, Monitoring, Reporting, Risk Management Policy, Finance and Insurance Sector, South East Europe*

## Introduction

A broad concept of hazard risk management comprises a systematic process of using administrative decisions, organization, operational skills and capacities to implement policies, strategies, and coping capacities of the society and communities to

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lessen the impact of natural hazards and the related environmental and technological disasters. Climate change has been observed (World Bank and UN ISDR, 2008) in SEE through higher temperature, changing precipitation and run off patterns, and extreme weather, leading to weather-induced disasters such as floods, droughts, wild fires, strong winds, and heat and cold waves in many countries of the SEE region.

In climate change issues, which increase disaster risk, risk management for a disaster becomes a vital and urgent component of any climate change adaptation program. As part of climate change adaptation policies and investments, SEE countries have to focus on reduction of their vulnerability and planning measures to mitigate natural disaster risks.

The paper reviews the current knowledge on the implications of climate change resulting in extreme weather and it analyzes the capabilities of Serbia as a SEE country to mitigate and manage the impact of extreme events. Therefore, the purpose of this paper in the areas of disaster risk mitigation, emergency preparedness and management practices in public and private sector is to reduce the current and future vulnerabilities.

Strategic dimension of the protection and rescue system in the Republic of Serbia has been established in an integral way by adoption of the National Protection and Rescue Strategy (2011) and it has been normatively regulated by the Law on Emergencies (2009). The starting point in the new system is the principle by which a crisis has to be solved at the place of its occurrence; consequently, a significant part of responsibility has been transferred to local governments. However, it is not followed by necessary legal institutional upgrade of the system, material and technical investment, as well as the appropriate personnel measures. The adoption of the Law has not provoked the expected reaction in the sense of its execution.

The aim of the paper is to contribute to better understanding of disaster risk and its implementation in practice for disaster risk management concerning: vulnerability, hazard characteristics, exposure of persons and assets, capacity and the environment.

Such knowledge can be leveraged for the purpose of:

- Pre-disaster risk assessment, for prevention, mitigation and development;
- Implementation of appropriate preparedness;
- Monitoring and reporting on disaster risk in public and private sector at a national level, and effective response to disasters, and
- Strengthening disaster risk governance, and integration of disaster risk management including business continuity into business models and practices through disaster-risk-informed investments, especially in micro, small and medium-sized enterprises.

## Literature overview

Definitions of mitigation measures are different in the context of disaster risk reduction and climate change, but very often they are defined as human measures to reduce the sources or enhance the sinks of greenhouse gases. Climate change mitigation measures include energy conservation, land use plan enforcement, strengthening institutional and legislative mechanisms, energy efficiency measures, waste management, fossil fuels substitution with renewable energy sources, other measures in the transport and agricultural sectors, and sequestering carbon biologically through reforestation.

According to the UN International Strategy for Disaster (2006), the term mitigation can be defined as structural and non-structural measures undertaken to limit the adverse impact of natural disasters, environmental degradation and technological hazards. Disaster Risk Management terminology could be presented in the broader framework of adaptation to climate change illustrated by Figure 1.

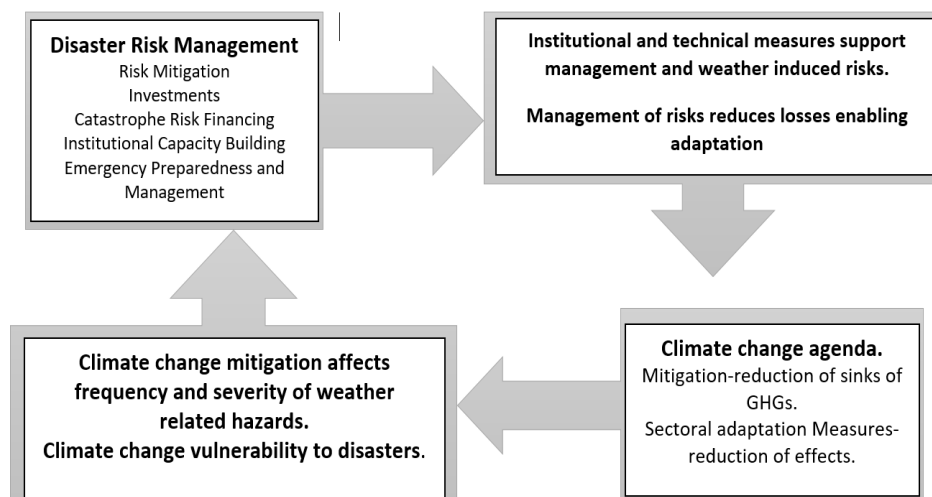


Figure 1 – Climate change and Disaster Risk Management (Source: Pollner et al., 2010)

The capacity of a country to manage risk posed by disasters can be summarized as *the concept of hazard risk management institutionalization* – the elements of a regulatory framework in place, a sufficiency of the statutory authority to allow for formulation and execution of comprehensive disaster risk programs.

### Disaster risk mitigation definition

According to the World Bank (2005), mitigation means structural and non-structural measures undertaken to limit the adverse impact of natural disasters, environmental degradation and technological hazards. On average, a dollar spent on hazard mitigation saves four dollars in future disasters. Mitigation reduces the impact of disasters, saves lives and reduces economic loss. The measures relevant to be taken for every hazard can be classified as follows:

- *Retrofitting*. Property protection involves modification of the existing structures to withstand natural hazards. The examples include installing backup valves in sewage and water pipes, elevating structures, installing storm shutters, seismic strengthening, etc.
- *Regulations*. Regulations involve controlling the use of land and construction of buildings to reduce potential loss. The examples include enforcing building codes and establishing land use zones.

– *Protective Structures.* Structures can be built to protect and mitigate the impact of disasters. The examples include erecting sea walls, building safe rooms, and constructing levees.

– *Natural Resource Management.* Managing natural resources minimizes the risk of hazards. The examples include controlling erosion, managing forests and restoring wetlands.

Mitigation measures can also be grouped into two types of actions as:

– Soft non-structural measures, process-oriented actions completed through the Multi-hazard Mitigation Council, developing the mitigation plan, identifying mitigation actions and implementation strategies, regulations and planning such as mapping hazards and enforcing building codes, and

– Hard measures such as building dykes and reservoirs, usually encompassing structural investments.

The actions to reduce the general risk of natural hazards would include:

– Development of regulatory and institutional framework. A regulatory and institutional framework establishes national responsibilities for risk mitigation by providing the authority to respective governmental agencies to discharge responsibilities related to agreement with government measures. The specific legislation that allows jurisdiction to adopt and enforce land use ordinances and building codes is included in this framework , and

– The framework should also include the development of a national mitigation action plan. After assessing risks and potential mitigation measures, an action plan can be developed describing how actions and investments will be prioritized, implemented and administered.

Hazard monitoring and data collection have the main aim to determine the vulnerability of a country's population with the institutions responsible for monitoring hydrology and meteorology and collecting geological data, which have to be properly equipped.

*The development of natural hazard risk assessments* for selected areas and hazards, based on the analysis of historical events at these locations, can feed into probability distributions and predictions of likely future occurrences. To undertake a risk assessment, data should be collected and analyzed on the assets and populations exposed in a given location. Probable damage scenarios, vulnerability models and loss scenarios analyses are useful tools, which constitute key foundations for the development of preparedness actions and investments, as well as risk financing options. Hazard risk mapping can provide data on the likelihood and consequences of specific hazards in selected areas of information that gives a basis for risk mitigation prioritization and investments. A critical element in reducing vulnerability could also be an analysis of human settlements and infrastructure in high-risk areas.

Geographic Information Systems (GIS) with layers of digital data can help create risk maps and data sources that enable further use of subsequent mitigation measures such as land-use planning, improved building codes, incorporation into relevant legislation, securing funds for investments.

Furthermore, it is important to develop and implement a public awareness campaign to educate individuals on how they can personally reduce the risk of hazards that occur in their area. Television and radio, schools and community outreach programs can disseminate this kind of information. Public awareness of these risks also helps monitor developments on the ground and keeps authorities accountable for their actions in adaptation and hazard risk mitigation. The hazard risk mitigation and emergency prepared-



ness project, a multi-hazard public awareness campaign tailored to various target audiences such as children using multiple media including the Internet websites with links to educational tools for students could be developed.

*Flood risk reduction.* Taking into account the projected impact of climate change and growing risk and losses due to floods in Serbia, flood protection measures to reduce the country's vulnerability have to be improved and expanded, where the following examples of soft and hard measures can be useful:

– *Implementation of Flood Management Program* to be addressed in river basin and catchment water management plans. Watershed basin planning and feasibility studies for rehabilitation and upgrade of the existing flood protection schemes should be developed or reviewed in light of climate change projections. Flood management also includes flood-plain zoning, development of land use plans and implementation of regulations. Specifically for coastal parts of a country prone to rising water levels in the long term, a flood management program should include coastal planning and development of coastal zone regulations such as shoreline setback requirements.

– *Natural Resources Management* for restoring resources to their natural state may reduce the impact of flooding. Before all, restoring dunes and beaches can impede coastal erosion. Removal of debris in river channels allows for the natural movement of water and it prevents sediment building up. In order to assist in the design of specific measures, studies for specific watershed areas can be carried out and agreements reached to determine how the management of natural resources within each country can reduce the likelihood of flooding.

– *Flood Protection Infrastructure.* Flood protection investments that safeguard particular localities may include riverbank protection, improvement of reservoirs and dykes, retrofitting of dams for safety with larger spillways and gates, enlarging floodways, building levees, floodwalls, seawalls/ bulkheads, dam monitoring, reviews and revisions of operating rules for dams, etc. Feasibility studies that incorporate economic, environmental and social assessments should precede decisions on flood protection investments, accounting not only for historical frequency and data loss, but also climate change data and projections as the probability and return periods may change and require a modified technical approach.

– *Flood Resistant Construction.* A variety of measures can be undertaken to build flood-resistant structures. Firstly, buildings can be constructed with flood-resistant materials, walls can be strengthened to withstand the pressure of floodwaters and floating debris and structures can be properly anchored to foundations or footings. Buildings can be elevated above the average waterline for a 100-year flood event, so that building floors are above floodwater level, and

– *Hydro-meteorological Monitoring and Forecasting System.* The effective functioning of hydro meteorological systems is very important for disaster preparedness and response. Floods occur not only by inundation of large water plains, but also in small, shallow river areas. Spillage and failure of dams can also cause flooding. In many cases these disasters are predictable in a given time horizon and allow for early warning and response actions, particularly in downstream countries. In order to provide effective warning and response a reliable weather and water monitoring system must be in place. The sharing of meteorological and hydrological data and forecasts is essential both within a country and among upstream and downstream countries.

Public Awareness Campaigns should develop information on how extreme heat affects the body and what steps to take to reduce the impact of heat, which is important to communicate to save lives. Also, education and public awareness efforts should target specific groups such as farmers, tourists and house owners in vulnerable areas on behavior in the high-risk seasons to reduce wild fire risks (Radović et al., 2013).

*Insurance and capital market support.* While risk mitigation and adaptation actions are the imperative to reduce losses from events arising with short warning, certain residual risks and losses will materialize, nonetheless. Financial and insurance markets can potentially cover these costs along with creation of special financing and risk transfer facilities in collaboration with the private and public sectors and international institutions (Miškić et al., 2017).

The main concern in the past flood experience was the fact that direct insurers were not buying sufficient coverage at upper layers, presumably because of a combination of short price and career horizons compared to the return periods of the catastrophes concerned. There is some evidence that this is changing, however, possibly driven by the increased frequency of climate change-induced natural disasters in the last decade and a half, where the increased frequency is due to hydro meteorological events and may reflect on cost of catastrophic losses and the impact of human-induced CO<sub>2</sub> contamination finally emerging (Miškić et al., 2017).

Aside from balance sheet realities of insurance companies, there are other imperatives for direct insurers to offload climate-induced catastrophe exposures. In particular, it is very uncommon for insurers to be allowed to build reserves for losses that may occur after the current operating cycle. The insurance elements of the new international financial reporting standard do not allow for such reserves, and any catastrophe buffers the need to be held as equity capital. In addition, most tax regimes do not allow catastrophe reserves to be set aside from pre-tax income. Executives or boards are not likely to allow large amounts of unutilized capital to build up in the normal course of events.

The incentive to hold minimal capital will be offset to some extent if current thinking about insurer regulatory capital becomes the norm. This thinking is best captured by the proposed solvency II regime in Europe, which follows the Basel II formulation for banks. Under solvency II, insurers will be required to establish two capital levels, a solvency capital requirement, which represents the economic capital required, given the risk characteristics of the insurer and a minimum capital requirement, below which the insurer will lose their right to trade. If an insurer falls below their solvency capital level, the financial supervisor will be required to intervene in their affairs.

The solvency capital will reflect a range of risks, including market, capital, reserving and underwriting risk. All four of these will be affected by climate change, and the capital allocation for reserving and underwriting risk will include an explicit allowance for retained catastrophe risk. In addition, there is a trend for insurance supervisors to look at the quality of reinsurance when determining insurer solvency.

Smaller countries such as Serbia may require multilateral support (a credit enhancement) to gain access to capital markets. Governments and local industry may simply need to recognize that new mechanisms can both increase coverage and stabilize the cost of premiums. Such assessments require skills in financial modeling, something multilaterals can help organize and finance.

In the alternative catastrophe bond markets (where the global markets have a capital multiple of approximately 70 times that of the global insurance markets), investors buy high-yield bonds from the party that seeks to be insured. These bonds can either be backed by premiums collected in an underlying insured pool of assets and property or they can be structured as a financial option, where a physical measurable disaster triggers the loss of interest and principal if a major catastrophe occurs during the life of the bond, and thus the bond proceeds are used by the insured party, but lost by the investors. Investors are attracted to these bonds because of their low probability of disaster default while paying attractive yields and their lack of risk correlations with the overall financial markets, which provides them with a diversified asset.

## Methods and Materials

### *Key research results*

Serbia is a landlocked country situated in Southeastern Europe, in the center of the Balkan Peninsula, between 41°53' and 46°11' latitude North and 18°49' and 23°00' longitude East on an area of 88,509 km<sup>2</sup>. The Serbian climate is moderately continental, with localized variations and a gradual change between the seasons. The annual rainfall in low-lying areas ranges from 540 to 820 mm, between 700 and 1000 mm of rainfall annually in parts of the country 1000 m above sea-level, while some mountain peaks in Southwestern Serbia have up to 1500 mm of rainfall a year (Republic Hydro meteorological Service of Serbia, 2012).

The majority of Serbia has continental rainfall patterns with larger volumes in the warmer half of the year, apart from southwestern areas, which have the greatest amount of rainfall in autumn. June is the rainiest month with an average of 12% to 13% of the total annual rainfall during this month. February and October are the least rainy months. The normal annual volume of rainfall for the entire country is 896 mm. The northern part of Serbia, Vojvodina, located in the Pannonian Plain, is predominately flat. There are also plains in Mačva, Posavina, Pomoravlje and Stig, as well as in Negotinska Krajina in Eastern Serbia. More than the half of the territory of Serbian land is arable with Vojvodina – the country's main agricultural region. The central part of Serbia and the hilly Šumadija region are located south of the Sava and Danube rivers. Further south, the hills gradually give way to mountains.

Serbia is rich in gorges, canyons and caves, as well as preserved forests, which are home to a multitude of endemic species. Serbian mountains belong to the Rhodopsin range, which runs along the right and left sides of the South and Great Morava rivers and to the Carpathians and Balkan Mountains in the eastern part of the country. Serbia as the country of South East Europe is exposed to a variety of natural hazards including floods, droughts, forest fires, earthquakes and landslides and it is one of the most susceptible countries to floods. On average, Serbia experiences one flood event every two years.

Table 1 – *Climate change data*

Region	Mean Annual Temperature Change	Mean Seasonal Temperature Change	Change in Mean Annual Participation	Change in Seasonal Participation	Change in Annual Runoff	Participation Intensity	Participation Per Extreme Events	Consecutive Dry Days	Frost days	Heat Wave duration
<b>SEE</b>		2.1 <sup>0</sup> C (Summer)		-(Summer)						
<b>Europe</b>	1.8 <sup>0</sup> C	1.8 <sup>0</sup> C (Winter)	-6%	-6% (Winter)	-25%	2%	-	5	-17	23

(Source: UN, 2008)

In most cases, occurrence, scope and duration of natural disasters cannot be predicted in advance, but there are some phenomena for which, based on experience, statistics and methods of modeling, as well as the place where they usually occur, it is possible to expect that they could occur. An assessment of vulnerability of the territory of the Republic of Serbia to floods and landslides has been done and on the basis of the available statistics the map of natural disasters risk (forest fires, floods, landslides and earthquakes) has been made. Table 2 shows the estimated area of the Republic of Serbia vulnerable to natural hazards and it covers the total area of 57.33 % (Dragičević et al., 2011).

Table 2 – *Areas vulnerable to natural hazards in the territory of Serbia*

Natural hazard	Area (km <sup>2</sup> )	Percentage of total Serbian area (%)
Seismic hazard VI II-IX MCS	16388.59	18.55
Seismic hazard IX-X MCS	1109.71	1.26
Excessive erosion areas	3320.80	3.76
Landslide hazard areas	13327.60	15.08
Areas vulnerable to drought	18306.93	20.72
Potential floodable areas	15198.07	17.20
Highest risk of forest fires	3154.95	3.57
Vulnerable areas in Serbia	50659.87	57.33

(Source: The World Bank, 2016)

Most experts agree that climate changes will cause more frequent extreme climate consequences such as floods, landslides and fires (Sekulić, et al., 2012). The positive trend of number of catastrophic and unfavorable natural events especially reflects in the events depending on meteorological conditions. Table 3 contains the data related to the natural disasters registered in the last 20 years on the territory of Serbia.

Table 3 – Extreme events in Serbia, 1980-2017

Process type	Date	Catchment area/Region	Municipality	Fatalities	Overall losses (€)	Additional information
Earthquake	May 1980	Kopaonik				Measuring 5,8 on Richter scale
	September 1998		Mionica			Measuring 5,7 on Richter scale
	November 2010		Kraljevo	2 killed, 180 injured		Measuring 5,4 on Richter scale
Flood	1999	The river Velika Morava	Šumadija	8		30 bridges damaged
	2005	The river Tamiš	Sečanj, Žitište, Plandište			85,000 people, 150 houses flooded, 1,000 people evacuated
Landslides and escarpments	2014	Serbia	24 municipalities	51	1,800,000,000	31,879 people evacuated
	2006	Bogdanje	Trstenik			130 houses destroyed
	2014	Umka-Duboko	Belgrade	Belgrade	54,000,000	Area of 1.8 km <sup>2</sup> , about 14,000,000 m <sup>3</sup>
	2014	Krupanj	Krupanj		4,680,000	389 facilities either damaged or destroyed
	2014	Kladovo	Kladovo			30 landslides
Blizzards and snowdrifts	February 2014	Vojvodina, Eastern Serbia	Feketić, Majdanpek, Knjaževac			5m high snowdrifts
	January 2017		13 municipalities in Serbia	Several people	60,000 per day	Regular ice defense along part of the Danube, Sava and the entire flow of the Tisa
Hail	May 2015	Central Serbia	Arilje, Kragujevac		10,000,000	50% of raspberry growing areas
	June 2016	Banat	Pančevo			Damaged facilities, vehicles, crops

Process type	Date	Catchment area/Region	Municipality	Fatalities	Overall losses (€)	Additional information
Drought	2000	Vojvodina and Central Serbia			657,000,000	Extreme drought, 37-61 tropic days
	2003	Vojvodina and Central Serbia			940,000,000	Extreme drought 2007
	2007	Serbia			564,000,000	Caused 258 forest fires
	2011	Eastern, Southeastern and Central Serbia			470,000,000	Extreme drought
	2012	Vojvodina and Central Serbia			1,900,000,000	5 to 8 heat waves
	March 1914-1918	Serbia		150,000 - 200,000		Typhus
	March 1972	Serbia - total number of 174 persons	1 in Vojvodina	175 ill, 35 dead		Variola
	1998, 2010, 2014	Sokobanja, Pčinja, Gadžin Han		– 16 30		1998, 2010, 2014 Tularemia

(Source: Seismological survey of Serbia, 2012; The World Bank, 2016)

According to the Institute of Agricultural Economics in Belgrade, the damage caused by the drought in 2012 was more than 2 billion dollars, and in 2011 about 500 million dollars (Dželetović et al., 2013).

As the result of floods in 2014, the total number of 1.6 million people in the whole country were either directly or indirectly affected by the disaster. Floods and landslides caused death of 51 people out of which 23 people drowned. Besides this, another 31,879 persons were temporarily evacuated from their flooded and destroyed homes; 24,000 of them were from Obrenovac. Most of the evacuated persons found their shelter with their relatives, but 5,000 were placed in temporary accommodation organized by the Red Cross of Serbia and the Serbian Government. This doubled the number of internally displaced people, which had made the majority of the displaced people even before the floods. The total value of the destroyed goods in 24 affected municipalities covered by damage assessment was 885 million Euros, and the value of the losses was 640 million Euros, so the total amount was 1,525 million Euros as shown in Table 8. This amount of money makes 3% of total gross domestic product in the whole country providing evidence of seriousness of the catastrophe caused by the floods and landslides. The damage from the flood in Kolubara mines is estimated to minimum 100 million Euros. Water turned Kolubara mines into lakes. Each of the four mines was flooded, two of them completely. In the biggest OPM Tamnava – West Field even 10 excavators were flooded and six of them were completely under water. Min-

ing Basin Kolubara produces 70% of Serbian lignite, which is used in thermal power plants TENT producing more than 50% of Serbian electricity. At some places, water is as deep as 60 meters. In Obrenovac and the region, 22 power transformer stations were flooded and one cannot enter there. When some municipalities, which were not included in the needs assessment in the process of renovation and which were affected by the disaster less than previously mentioned ones, have been taken in consideration, the estimated value of the damages and losses should be increased from 1.7 to 1.8 million Euros (Government of the Republic of Serbia et al., 2014).

The World Bank (2005) identified the *weather dependent economic sectors* in the Republic of Serbia, participation of these sectors in gross national income (without VAT), registered and assessed damage. Participation of the weather dependent sectors in gross national income of the Republic of Serbia (without the autonomous Province Kosovo and Metohija), for the period from 2000 to 2004 varied from 42% to 43.8%. In 2005 participation of the weather dependent sectors in gross national income of the Republic of Serbia was already 47.18%. The World Bank Study comprised only 49% of the weather dependent sectors, and it did not take the damage caused by forest fires into consideration. However, 258 forest fires were registered during 2007. The area of 33.000 hectares of overgrowth was burnt and out of that area 16.000 hectares were forest area. The forest fires caused the damage of about 40 million Euros. 24 million Euros was the amount necessary only for recovery. Indirect damage was not estimated.

Table 4 shows the estimated damage in the weather dependent sectors in the Republic of Serbia. There is no doubt that Serbian economy suffers enormous losses in material goods, but it is also obvious that the atmospheric disasters on the territory of the Republic of Serbia cause losses in human lives.

Table 4 – *Estimated damage in the weather dependent sectors in the Republic of Serbia*

Sector/unfavorable weather events	Estimation of losses in sectors	
	Average annual losses in millions of dinars	Average annual losses in human lives
Agriculture/floods	from 3.100 to 8.500	Several to tenths
Waterpower engineering/floods	About 1.960	-
Agriculture/hail, heavy rainfalls, strong wind	About 7.316	Several to tenths killed by thunder stroke
Agriculture/ drought, frost	About 4.000	No losses
Production of energy (heat)/ extremely low air temperature	About 716	Several to tenths
Maintenance of roads/snow, ice, icing	About 3.500	
<b>Losses in human lives on highways, regional and local roads caused by bad weather conditions vary from 105 to 131 per year</b>		
Commercial air traffic	From 54 to 72	
<b>TOTAL</b>	<b>From 16.648 to 48.572</b>	<b>From several to 160</b>

(Source: The World Bank, 2016)

*Reporting, awareness and knowledge* has been assessed as highly important for the implementation of climate change policy as these activities could strengthen national expertise in different areas: increase in public awareness on various issues; provision of information that is necessary to formulate national policies and measures in the area and informing donors about the achievements and needs of countries. Monitoring and Reporting is necessary for the further implementation of domestic mitigation measures and it is necessary for obtaining international support for NAMAs. This requires detailed quantitative and qualitative evidence. Thus, a monitoring and reporting system should be in place in the country in public and private sector, too.

*The monitoring and reporting* and improvement of the capacity to establish an efficient Measurement, Reporting and Verification (MRV) system could be assessed as not sufficient in Serbia. Although monitoring and evaluation of implementation of climate change policies is considered important, the existing system for GHG inventory is evaluated as insufficient together with the monitoring system for the implementation of the national climate change policy. According to the institutional point of view, the climate change departments exist in the following Serbian ministries: environment (climate change division, 5 employees), energy (Department for Sustainable Development and Climate Change) and foreign affairs. Additionally, there are climate change experts in environment, economy/finance, agriculture/forestry, energy, transportation, health, foreign affairs and other organizations/institutions – between 1 and 2. At the national level in Serbia there are the Initial National Communication; the National Strategy for incorporation of the Republic of Serbia into Clean Development Mechanism under the Kyoto Protocol for waste management, agriculture and forestry sectors; the National Environmental Protection Programme; the National Sustainable Development Strategy (NSDS) and Action Plan for the implementation; the Serbian Energy Development Strategy by 2015; the Forestry Development Strategy; the Strategy for Scientific and Technological Development; the National Strategy for Biodiversity.

As the Western Balkan country the accession to the EU presents for Serbia a challenge to meet the relevant climate change requirements, but at the same time it is an opportunity in terms of financing sources. However, there is a need of a certain level of capacity in order to have an access to the existing financing and to prepare for the future financial assistance.

Although Serbia had an open access to the EU funds: IPA, TAIEX, UNFCCC: GEF, bilateral donors: the Government of Japan – Capacity Development project on National Appropriate Mitigation Actions; the Government of Norway – development of National Strategy for incorporation of the Republic of Serbia into Clean Development Mechanism under the Kyoto Protocol; the Government of Spain – Feasibility Study "Efficient ways for GHG emissions reduction under the post-Kyoto framework"; the Government of Italy, different activities related to climate change have showed that there is a need for more capacity building in order to be able to use the EU funds efficiently and that the EU funds are not sufficient to meet the country's needs in the area of climate change. There are certain activities related to capacity building of Serbia of all relevant stakeholders including representatives of energy and industry sector, in order to introduce those key elements of EUETS and to prepare them for the future implementation.



The established practices for risk management are very important, but not regulated enough as a set of obligations of organizations of protection against natural and other bigger disasters and creation of the conditions for their elimination, i.e. reduction of their consequences because of what presented are also the results of the qualitative research in private sector concerning the disaster risk management reporting practices. Some results of the research carried out in business sector on reporting on disaster risk are presented further in this paper.

### *Risk management monitoring and reporting on disaster risks practices of manufacturing, financial and insurance companies*

In 2016 the field research was conducted in Serbia in 100 manufacturing enterprises, financial and insurance companies on various disaster risk management issues, assessment and monitoring practices. For the purpose of this paper those concerning practices in risk management reporting on disaster risks are presented.

The Hypothesis was: The reporting on disaster risk management has the important impact on enterprise income. The basic descriptive methods of statistical analysis and linear regression were used for the analysis. The impact of the further three dichotomous variables is presented:

$X_1$  = Risk of the lack of internal reporting on disaster risk,

$X_2$  = Risk of the lack of internal reporting on disaster risk determined by the auditor,

$X_3$  = Risk of the lack of internal reporting on disaster risk established by the competent institution.

According to the research results, the highest impact of disaster risk reporting and monitoring on the enterprises revenue and income had variable  $X_1$  (30% of respondents).

Variable  $X_2$  (less than one quarter of respondents) confirmed that the impact of *Lack of internal reporting on disaster risk determined by the auditor* had been of importance for the revenue.

Some (over 10% of respondents) think that Risk of the lack of internal reporting on disaster risk established by the competent institution is of importance for the revenue of the enterprise. Table 5 shows the values of regression coefficients and standard errors.

Table 5 – Achieved values of logistic regression

Variables		OR	Regression coefficients	Standard error
Regression constant			0.4853	3.62 E-02
$X_1$	lack of internal reporting on disaster risk	0.4125	0.0253	5.29 E-02
$X_2$	lack of internal reporting on disaster risk determined by the auditor	0.3140	0.0094	6.79 E-02
$X_3$	lack of internal reporting on disaster risk established by the competent institution	0.1300	0.0145	9.13 E-02

Variables	OR	Regression coefficients	Standard error
<i>Total assessment error (Q):</i>	<b>0.2724</b>		
<i>Determination coefficient (R<sup>2</sup>):</i>	<b>0.8091</b>		
<i>AIC:</i>	<b>32.739</b>		

(Source: Authors)

All estimated regression coefficients have positive values, confirming the validity of the Hypothesis. The estimated values show the impact of all dichotomous variables (i.e. the type of risk of financial reporting on climate risk) on achieved income (and business as a whole) in the surveyed legal entities, emphasizing the lack of internal reporting on this risk as the most important one.

## Discussion and Conclusions

The issues on disaster risk monitoring in the risk management policy in Serbia have been presented in this paper.

The main goal of the illustrated data in the paper was to better understand capacity issues that Serbia faces in response to the new challenges of climate change, in particular related to formulating comprehensive approach to ensure sustainable human development using emerging opportunities. Besides the literature overview, the paper discusses the projected impact of climate change, the reduction of the current and future vulnerabilities to hydro meteorological risk that should be built on and how to expand the existing disaster risk management efforts. The disaster mitigation could be more successfully assessed if it is based on the past vulnerabilities may not sufficient in light of recent scientific forecasts, which leads us to the conclusion that the existing mechanisms in Serbia are already insufficient for the current level of vulnerabilities.

Coordination mechanisms among the EU are not well developed, concerning both the horizontal coordination among various sectors and the linkages between the central and local levels.

Hazard warning and monitoring systems require improvement. The country's hydro meteorological systems, in particular, should be enhanced, and technological advancements in this area should be integrated. Hydro meteorological data can be a very efficient tool for collaboration and information sharing.

Economic considerations are not fully integrated in investment decisions. It is important that cost-benefit or cost-efficiency analysis is part of the investment prioritization process necessary for the development of sectoral, national and local disaster risk mitigation plans and climate change adaptation strategies.

Catastrophe risk financing tools are not fully utilized. Insufficient funding of disaster risk mitigation investments further underlines the question of capacity building of Serbia to apply successfully for the open EU funds.

While the importance of mitigating the risk of natural hazards is recognized in Serbia, it still does not have a comprehensive disaster risk reduction strategy and a multi-year cross-sectoral

investment plan. Also, at the level of business sector a comprehensive disaster risk planning and reporting system is necessary, as internal and controlled mechanisms from external auditors for the reduction of possible impact on the revenues and income of the enterprises.

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# KNOWLEDGE OF CHILDREN AND YOUTH ABOUT FOREST FIRES: DISCREPANCIES BETWEEN BASIC PERCEPTION AND REALITY

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Forests have a vital role for all living things. Children understanding of forest phenomena is the important knowledge for various sectors such as educators, policymakers, environmentalists, etc. This paper deals with the factors that affect knowledge and perception of forest fires of students, aged 10 to 19, in the city of Belgrade. The research was conducted between October 20<sup>th</sup>, 2013 and February 3<sup>rd</sup>, 2014. The authors have used a method of surveying students in order to identify and describe the factors affecting their knowledge about forest fires. A total of 3,548 students from 18 schools in Belgrade participated in the survey. The results of the research show that there is a discrepancy between perception and reality that is what students think they know and what they actually know in very basic terms. This set of findings in combination with other findings of moderators replicates previous research on the need for educational programs to ensure there is a match between youth confidence about what they know of hazards and their actual knowledge levels. Mismatches between the two could have serious consequences in disaster risk reduction terms. Given basic knowledge gaps here, this translates into educational programming that then needs to take account of this basic discrepancy to ensure, even from the early ages, consistency between “knowledge and coping confidence” and actual knowledge and ability to cope and respond.

Key Words: *disasters, forest fire, perception, Belgrade, children*

## Introduction

In more recent times, forest ecosystems for livelihood of people are considered less important than previously, especially in the most industrialized countries (Heino & Karvonen, 2003). However, young people are typically more attuned to environmental issues compared to adults including considering forests essential for living, with additional benefits perceived in the social sphere (Genç & Dem, 2010). Yet, these ecosystems are in danger of deforestation. Additionally, uncontrolled fires have been found to be on the rise in the last century all over the world (IPCC, 2007). Apart from material damage manifested in the destruction of timber and funds spent for reforestation, they also, of course, destroy lives and habitat in fire-affected areas (Choobineh, Ansari, & Mohagheghi, 2015). Therefore, this topic is of interest to the scientific community and it is not limited to ecological and economic threats posed by these hazards, but it also focuses on environmental concerns including wildfire threats.

In fact, wildfires and human-wildfire interactions have been examined more extensively in recent years to understand relevant human behaviors including prevention, mitigation and preparedness actions. Specifically, there are several studies on stakeholders knowledge and perception in wildfire-prone areas (Doerr & Santin, 2016; Gerald, 2010; Martin, Martin, & Raish, 2011; Martinez-de Dios, Arrue, Ollero, Merino, & Gómez-Rodríguez, 2008; Ryan & Hamin, 2008; Thapa, Cahyanto, Holland, & Absher, 2013); on preparedness and evacuation (Martin, Bender, & Raish, 2007; McNeill, Dunlop, Heath, Skinner, & Morrison, 2013); and on responses (Kulig et al., 2012). According to recent research (Finnis, Johnston, Ronan, & White, 2010), public education campaigns mainly focus on adults awareness, knowledge and preparedness in relation to a range of natural hazards including forest fire and related environmental issues. The main thrust of this line of research is to evaluate enhancements in preparedness as a function of the increased awareness, knowledge and personalized concern.

By contrast, research on children and youth awareness, knowledge and opinions about fires is less forthcoming. However, the recent large-scale qualitative study (Towers, 2015) that included 26 focus groups with 87 8-12 year-old children and collateral interviews with 37 parents has demonstrated that children are quite capable of engaging in serious discussions about wildfires.<sup>1</sup> At the same time, small research on wildfire education in school settings has been conducted. The research has demonstrated that schools can play a crucial role in household and local community readiness towards a possible hazardous situation (Ronan et al., 2016; Shaw, Shiwaku, & Takeuchi, 2011). In other words, schools are not only agents for education of children and youth, they can help with "actionable knowledge" transfer to other members of household (Calik, 2013; Ronan et al., 2016) and community (Shaw et al., 2011). Of course, in order to ensure educational programming to be effective, it is necessary to have trained teachers that are confident of teaching hazardous events including wildfires. The research demonstrates that even in the face of nationally rolled out "ready to go" programs and resources in hazard education, teachers will report not feeling confident about teaching such programs or resources (e.g., fear of scaring children and youth) (Johnson, Ronan, Johnston, & Peace, 2014).

<sup>1</sup> In the Australian context, where this research was conducted, fires in the wild are referred to as bushfires.

In the Calik (2013) study, the emphasis was on senior science student teachers confidence in teaching such material, which showed that confidence could be increased and that such training is considered to be acceptable and feasible. Another finding of that study was that no educational programming can rely on science or technology “facts alone”, but it is necessary to incorporate more human interface (e.g., built environment; psychosocial dimensions). Moreover, Barraza and Pineda (2003) found that secondary school students in forest communities in Mexico emphasized the value of integrating environmental issues to help give additional shape to young people wild-fire awareness and knowledge. Beyond wildfires specifically and through analysis of textbooks used in educational programs in the Republic of Serbia, Milošević, Kovačević-Majkić and Panić (2012) argued that natural hazards and disasters are not more generally represented adequately, suggesting an educational profile of low concern towards this topic.

However, forest fires in Serbia have been on the rise since 2001 as a function of long and frequent heat waves interacting with human factors. The most extensive fires were in 2007 and 2012 burning respectively 17,500 ha and 2,150 ha of the mountain area with million euro damages (Dragičević, Milevski, Novković & Milojković, 2010; Lukić et al., 2013). Forests in Serbia cover an area of 2,252,400 ha, representing 29.1% of the total area of the country. This percentage includes 27.6% of high forests, 64.7% of low (coppice) forests and 7.8% of forestry plantations. Furthermore, the total forest area in Serbia comprises 53% of state-owned forests, while the remaining 47% of forests belong to private forest owners (mostly 2-3 ha per forest owner) (Cvetković, Gačić & Jakovljević, 2016).

Thus, on the basis of this backdrop, educating children and youth on forests including wildfires would be considered to be a useful conduit to better management generally, but, more specifically, to prevention and mitigation of forest fire risk. Thus, good understanding of children and youth awareness and knowledge about basic features of forest fires in Serbia can provide an important means to developing educational programs and teacher training about this topic. A working hypothesis in the current study is that many young people lack even some basic knowledge, but, at the same time, they have a perception what they should know. For example, in recent research done in Indonesia, most children (71%) have been found to have a perception that they know what to do to be safe in disasters; however, 96% of these children have been found to have a low-medium level of actual knowledge (Amri, Bird, Ronan, Haynes, & Towers, 2017). Similarly, here we have hypothesized that a large percentage of children would say they know what forest fire is, but that many of them, in fact, would not have even basic objective knowledge. We have also hypothesized that knowledge of very basic safety behaviors would also be lower. Receiving such information is quite important for developing hazard and disaster risk reduction and resilience educational programming including helping children differentiate between their perception and confidence and actual knowledge about hazards and their mitigation. In addition, the study also looked at perception and knowledge as a function of various demographic factors. Additional information has evaluated moderating factors including education achievement and youth educational modality preferences and outcomes as a function of modality exposure.

## Method

In order to evaluate factors that impact on child and youth knowledge about forest fires, we have developed a survey-based questionnaire described below. A large, multi-stage sample was recruited in eighteen schools in Belgrade City (Serbia) (Table 1). This research was conducted between October 20<sup>th</sup>, 2013 and March 02<sup>nd</sup>, 2014 involving 3,548 students aged 10-14 ( $M = 11.8$ ;  $SD = .84$ ) and 19 ( $M = 16.07$ ;  $SD = 1.24$ ).

*Survey instrument.* The first part of the questionnaire captured demographic variables including age, gender, the employment of parents and their education level. Secondly, twenty questions were developed guided by previous research and theory (Eriksson, 2009; Johnson & Miyanishi, 2001; Wisner & Cluster, 2006), to investigate students awareness and basic knowledge, familiarity with basic safety procedures, emotional arousal (i.e. fear), risk perception/feelings of protection in school, education and information in relation to experiences with forest fires and other hazardous events. A pilot pre-test was carried out with 50 students (25 male and 25 female) in "Saint Sava" School in Batočina to determine the appropriateness of questions and their level of understanding and comprehensibility. On the basis of the obtained results and feedback, the questionnaire has been then updated to improve readability and comprehensibility (e.g., more simple language used). The final questionnaire has a total of 29 items. The first 6 items are demographic and remaining 23 focus on hazard awareness, knowledge, education/discussions at school/home, information search, hazard exposure, hazard concerns/fears, perception of protection at school, motivation to learn about and participate in education related to disasters, a separate item on interest in training on emergency situations and preferred source(s) of information/education about natural hazards.

Table 1 – Sample of demographics by gender and school

Name of school	SAMPLE			POPULATION	
	Gender of students (%) (%)		Total	Gender of students (%)	
	male	female		male	female
Mathematical Grammar School	54.5	45.5	323	61	39
Law and Business School Belgrade	29.8	70.2	242	25	75
Electrical Engineering High School „Nikola Tesla“	84.0	16.0	243	80	20
Agricultural High School	35.3	64.7	150	29	71
Geodetic Technical School	67.7	32.3	161	58	42
Medical High School „Nadežda Petrović“	19.4	80.6	350	25	75
Geological and Hydrometeorological High School	49.4	50.6	83	41	59
„Nada Dimić“ Economics School	38.0	62.0	50	27	73
High School of Tourism	48.9	51.1	180	42	58
Sixth Belgrade Grammar School	39.6	60.4	457	35	65
First Belgrade Grammar School	36.1	63.9	379	44	56
Graphic High School	40.2	59.8	92	30	70
Electrical Engineering High School „Stari grad“	94.4	5.65	342	85	15
Drinka Pavlović	60	40	94	48	52
Borislav Pečić	57	43	96	51	49
Duško Radović	45	55	28	47	53
Ratko Mitrović	61	39	54	43	57
Marko Orešković	48	52	70	62	38

Representativeness of the sample was checked in relation to the general student population of Belgrade. The outcomes revealed that the sample was representative of the larger school student population with the current sample of children and youth including 49.6% male and 50.4% female students compared to the population sample comprising 51.3% males and 48.7% females ( $p > 0.00$ ). In terms of parents of sample participants, the largest percentage of them has completed secondary education (42.2% of mothers and 44% of fathers) followed by university graduates (25.9% of mothers and 24.1% of fathers), higher education beyond (22.3% of mothers and 21.6% of fathers) and, finally, those with postgraduate studies (7.8% of mothers and 9.4% of fathers). With regard to the employment of students' parents, in 61.2% of cases both parents are employed, whereas in 32.6% of cases there is only one parent employed, while in 6.2% of cases both parents are unemployed (Table 2).

Table 2 – Demographic profile of other major sample variables

		Frequency	Percentage (%)
Age	≤14	196	6.4
	15 – 19	2,867	93.6
Employment of parents	Employed - one parent	1,103	31.10
	Employed - both parents	2,244	63.20
	Unemployed	200	5.60
Education of father	Primary school	1.2	1.20
	Secondary school	41.3	41.60
	High school	21.6	21.80
	University	25.7	25.90
	Postgraduate studies	9.4	9.50
Education of mother	Primary school	2.0	2.00
	Secondary school	39.6	41.60
	High school	22.9	64.50
	University	27.7	92.20
	Postgraduate studies	7.8	100.00

## Results

In order to determine knowledge levels in relation to forest fires, respondents were asked the following question: "Do you know what a forest fire is?" The analysis of descriptive statistical data showed that 95.6% of the participants responded yes, 2.5% no with 1.8% endorsing 'do not know'. On the other hand, in order to establish more objective knowledge of the respondents who answered that they know, they were then asked to choose from the following: uncontrolled combustion processes of forests (63.2% - the correct answer), the process of the spread of fire smoke (24.3%), process of burning grasses (11.4%). In comparison to 95.6% of respondents who have answered that they know what a forest fire is, the results have supported our hypothesis and showed that objectively only 63.2% of respondents could endorse a more precise answer from a short list of three choices. Thus, 35.7% of respondents were wrong regarding more accurate knowledge. Clearly, if an open-ended question were posed, it is likely that fewer, perhaps much fewer than 63% could define/describe a forest fire with any precision.



Moreover, we wanted to determine whether they know how to properly react in the case of forest fires through the following item: 'How would you react in the event that you are at risk of a forest fire?' The results have also supported the hypothesis and they were the following: shelter would be a safe place and call the fire department and rescue teams (57%), would hide in the woods (17%), I would ignore and continue on my way (25%).

In terms of inferential findings and differences as a function of demographic factors, the results showed that there was a statistically significant relationship between gender and knowledge perception of forest fires ( $\chi^2 = 24.77$ ,  $df = 2$ ,  $V = 0.08$ ) and knowledge of forest fires ( $\chi^2 = 12.99$ ,  $df = 2$ ,  $V = 0.06$ ) (see Table 3). More females (97.3%) answered that they know what a forest fire is compared to their male counterparts (93%). Also, more females (65.8%) gave correct answers when describing forest fire in more objective terms compared to males (62.1%). Relatedly, more incorrect answers were given by male versus female students (37.9% and 34.2% respectively).

There was no statistically significant relationship between gender and familiarity with safety procedures for responding to disasters caused by forest fires ( $\chi^2=1.4$ ,  $df = 2$ ,  $V=0.02$ ). The relationship of age with knowledge or willingness to respond to forest fires represents a significant issue. The obtained results indicate that there was a statistically significant relationship between the age of the respondents and their familiarity with safety procedures for responding to disasters caused by forest fires ( $\chi^2 = 12.5$ ,  $df = 4$ ,  $V=0.04$ ). By contrast, there was no statistically significant relationship (see Table 3) between age and perception ( $\chi^2 = 3.6$ ,  $df = 4$ ) or knowledge of forest fires ( $\chi^2 = 3.7$ ,  $df=4$ ). Nevertheless, while no statistical differences were found, there was a magnitude of differences across major age groups: most of the student (15-19) respondents (59.3%) gave the correct answer to the question of what best described a forest fire compared to the 14 and under group (56.5%). Equally, the most incorrect answers (43.5%) were given by children respondents aged up to 14 compared to the 15-19 year old group (41.7%).

At the outset of the study, we thought that parent education level would influence the reduction of effects of disasters. While examining the connection between education levels of parents and their knowledge about forest fires, the results showed that there was a statistically significant relationship between children's fathers education level and perception ( $\chi^2=76.3$ ,  $df=8$ ,  $V=0.1$ ), knowledge of forest fires ( $\chi^2 = 31.7$ ,  $df = 8$ ,  $V=0.06$ ) and familiarity with safety procedures ( $\chi^2=29.4$ ,  $df=8$ ,  $V=0.00$ ). 97.1% of the children whose fathers have undergraduate level higher education responded yes to what a forest fire is compared to 87.1% of those who did not. However, interestingly, 12.9% of children whose fathers have an academic title (i.e., Masters; PhD), answered as not knowing compared to 2.9% of those who did not. In terms of objective knowledge, most of the children (69.2%), whose fathers are university graduates, gave the correct answer to the question of what best describes forest fires compared to 44.2% of those who did not. The largest number of incorrect answers (55.9%) belongs to respondents whose fathers finished primary school compared to those who had higher educational background (38.9%). Most respondents whose fathers are university graduates were familiar with safety procedures in case of forest fires (64.4%) compared to those whose fathers finished primary school (42.9%). Thus, these participants opted more often for an incorrect response. The results showed a statistically significant relationship between mothers education level and perception ( $\chi^2=86.2$ ,  $df=8$ ,  $V=0.17$ ), knowledge ( $\chi^2=26.9$ ,  $df=8$ ,  $V=0.06$ ) and familiarity with safety procedures for responding to forest fires ( $\chi^2=30.3$ ,  $df = 8$ ,  $V=0.06$ ). Most of the respondents whose mothers

have higher education (97%) knew what a forest fire was compared to those who did not (85.6%). Again, as with father data, 14.5% of participants whose mothers have academic titles (MSc; PhD) answered that they did not know compared to 3% of those who did not. Regarding knowledge about forest fires, most of the respondents (70.1%) whose mothers are university graduates gave the correct answer to the question of what best describes forest fires compared to those who did not (54.9%). The highest number of incorrect answers (45.1%) was given by respondents whose mothers have primary education compared to those who had higher levels of education (29.9%). Participants who were the most familiar with safety procedures in case of forest fires (63.7%) were those whose mothers are university graduates compared to those who were not (49.3%). Finally, the majority (50.7%) of respondents whose mothers have primary school education endorsed an inadequate procedure compared to those with higher levels of education (36.3%). The situation here reveals the same pattern as with fathers. The children with parents of higher levels of education also have more objective safety knowledge.

Table 3 – Analyses between demographic variables and study subjects

	Research variables	Value	df	Asymp. Sig. (2-sided)	Cramer's V
Gender	Perception of forest fires	24.77	2	.000*	.084
	Knowledge of forest fires	12.99	2	.002*	.061
	Familiarity with safety procedures	1.41	2	.493	.020
Age	Perception of forest fires	3.63	4	.459	.023
	Knowledge of forest fires	3.73	4	.444	.023
	Familiarity with safety procedures	12.52	4	.014*	.042
Fathers education	Perception of forest fires	76.32	8	.000*	.104
	Knowledge of forest fires	31.70	8	.000*	.067
	Familiarity with safety procedures	29.47	8	.000*	.065
Mothers education	Perception of forest fires	86.26	8	.000*	.110
	Knowledge of forest fires	26.96	8	.001*	.062
	Familiarity with safety procedures	30.33	8	.000*	.066
Success in school	Perception of forest fires	14.43	4	.006*	.045
	Knowledge of forest fires	69.98	4	.000*	.100
	Familiarity with safety procedures	76.42	4	.000*	.105
Employment of parents	Perception of forest fires	22.02	4	.000*	.056
	Knowledge of forest fires	6.80	4	.147	.031
	Familiarity with safety procedures	11.61	4	.020*	.041
Education in family	Perception of forest fires	4.34	2	.114	.035
	Knowledge of forest fires	8.91	2	.012*	.050
	Familiarity with safety procedures	9.07	2	.011*	.051
Education in school	Perception of forest fires	15.10	2	.001*	.065
	Knowledge of forest fires	1.65	2	.439	.022
	Familiarity with safety procedures	12.27	2	.002*	.059

\*The difference is significant at the 0.05 level.

The results showed that there was a statistically significant relationship between success in school based on self-reported school rating (successful versus average) and perception ( $\chi^2=14.4$ ,  $df=4$ ,  $V=0.04$ ), knowledge ( $\chi^2=69.9$   $df=4$ ,  $V=0.1$ ) and familiarity with safety procedures for responding to disasters caused by forest fires ( $\chi^2=76.4$ ,  $df=4$ ,  $V = 0.1$ ). 71.6% of

the participants who were excellent (5) in school knew how to describe forest fires compared to those who reported basic success (enough success, 2) (46.7%). By contrast, 45.9% of the respondents who reported a good level of success (3) gave incorrect answers compared to those who reported very good success (4) (59.9%). Most of the respondents (63.6%) who had excellent success in school showed familiarity with safety procedures in case of forest fires compared to those with enough success (46.7%), whereas 53.4% of respondents with enough success marked an incorrect answer (compared to 36.4% of those who reported excellent school success).

As seen in Table 3, there was a statistically significant relationship between parents employment and perception ( $\chi^2=22.1$ ,  $df = 4$ ,  $V=0.05$ ) and familiarity with safety procedures for reacting in case of disasters and forest fires ( $\chi^2=11.6$ ,  $df=4$ ,  $V=0.04$ ). On the other hand, there was no statistically significant relationship between parents employment and knowledge about forest fires ( $\chi^2=6.8$ ,  $df=4$ ,  $V=0.03$ ). Most of the respondents (96%) whose parents are employed endorsed that they knew what a forest fire was compared to 91% of those whose parents were not employed. The respondents (59.2%) whose parents are employed marked the proper procedure (compared to 52%), while the 47.4% of respondents with unemployed parents indicated an inadequate procedure in case of forest fires (compared to 40.8% of those who were employed). From the presented data, it can be seen that respondents whose parents are unemployed provided the largest number of incorrect answers and those with employed parents the greatest number of correct answers.

According to the results, there was a statistically significant relationship between education in school about dangers of forest fires and their perception ( $\chi^2=15.1$ ,  $df=2$ ,  $V=0.06$ ) and familiarity with safety procedures ( $\chi^2=12.2$ ,  $df=2$ ,  $V=0.02$ ). On the other hand, there was no statistically significant relationship between education in schools about the dangers of forest fires and their knowledge ( $\chi^2=1.6$ ,  $df=2$ ). Most of the respondents (96.3%) were familiar with forest fires due to their school education compared to 94.5% of those who were not familiar due to their school education. Relatedly, more incorrect answers (5.5) were given by those who were not familiar due to their school education versus those who were familiar with forest fires due to their school education. In terms of safety procedures, more children exposed to education (58%) knew the correct safety procedure versus those who were not exposed (52%) (Figure 1).

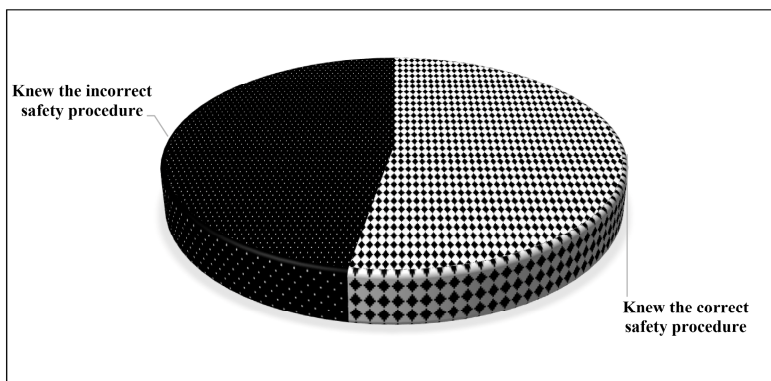


Figure 1 – Percentage distribution of safety procedure knowledge of children exposed to school education

In this study, there was a statistically significant relationship between respondents who learned about forest fires in family and knowledge ( $\chi^2=15.1$ ,  $df=2$ ,  $V=0.05$ ) and familiarity with safety procedures ( $\chi^2=15.1$ ,  $df=2$ ,  $V=0.05$ ). In contrast, there was no relationship between respondents who learned about disasters in family and perception ( $\chi^2=15.1$ ,  $df=2$ ). Most of the respondents (93.8%), who were informed within their family, answered that they knew compared to 90% of those who were not were informed within their family. More incorrect answers (10%) were given by those who were not informed within their family compared to 6.2% who were informed within their family. In terms of safety procedures, more children exposed to family learning (60%) knew the correct safety procedure versus those who were not exposed (54%) (Figure 2).

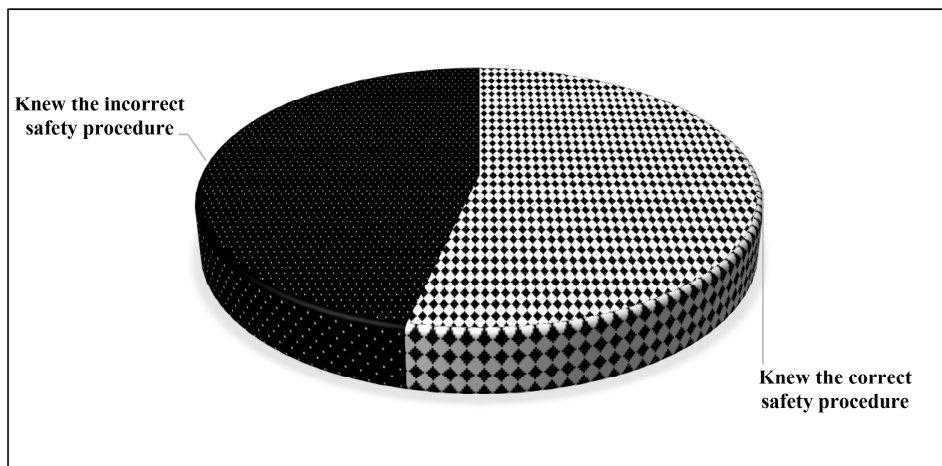


Figure 2 – Percentage distribution of safety procedure knowledge of children exposed to family learning

In their study, Kurita et al. (2006) found that audiovisual methods of dissemination of the knowledge about tsunamis are the most effective means. Also, they specifically pointed out that students gained more knowledge with the help of the media. These findings have been confirmed by this survey. By examining preferences of students for the manner in which they would like to learn more about wildfires it was found that 57.1% of respondents wanted to watch educational films and series; 33.1% wanted to participate in workshops; 21.7% wanted more classical classroom lessons; 20.2% wanted interesting video games; and 17.1% would like to learn through case studies.

The perception of forest fires was found to be related to the way of gaining information about disasters such as classical lessons, television, internet and interesting video games except radio. As seen in Table 4, significant differences have emerged as a function of exposure to a learning modality and perception, objective knowledge and safety

procedure knowledge. Here we have summarized group differences that were of the greatest magnitude (with other differences available from the authors). Perhaps reflecting more interest in video learning, most of the respondents (85.8%), who reported being informed by television answered that they knew compared to 74% of those who were not informed by television. Differences as a function of other modalities were minimal. For example, most of the respondents (97.5%), who were informed by classical classroom lessons answered that they knew compared to (95%) of those who were not informed in the same manner.

Objective knowledge of forest fires was also found to be related to television watching (65.2% television watching versus 57.1% non-television watching) and classroom lessons (69.7% correct versus 61.9% not exposed to classroom lessons). In terms of safety procedures, the greatest differences were found in a function of internet learning (69% versus 57.1%) and classroom lessons (69.7% versus 61.9% respectively).

Table 4 – Analyses between way of gaining information and study subjects

Research variables		Value	df	Asymp. Sig. (2-sided)	Cramer's V
Classical lessons	Perception of forest fires	10.13	2	.006*	.054
	Knowledge of forest fires	18.78	2	.000*	.073
	Familiarity with safety procedures	22.16	2	.000*	.080
Television	Perception of forest fires	121.80	2	.000*	.185
	Knowledge of forest fires	28.05	2	.000*	.089
	Familiarity with safety procedures	2.39	2	.302	.026
Radio	Perception of forest fires	.975	2	.614	.017
	Knowledge of forest fires	1.34	2	.510	.020
	Familiarity with safety procedures	9.29	2	.010	.052
Internet	Perception of forest fires	30.58	2	.000*	.093
	Knowledge of forest fires	52.62	2	.000*	.123
	Familiarity with safety procedures	13.25	2	.001*	.062
Interesting video games	Perception of forest fires	27.19	2	.000*	.088
	Knowledge of forest fires	11.89	2	.003*	.058
	Familiarity with safety procedures	6.90	2	.032*	.044

\*The difference is significant at the 0.05 level.

## Discussion

The current study has been designed to examine some important basics related to knowledge of forest fires in a large sample of the Serbian youth. The main findings here that perception of hazard-related knowledge does not equate to actual knowledge replicate recent research in Indonesia (Amri et al., 2017) done in an older age cohort in a different country. Here, a very large percentage, nearly 100%, perceived they knew what a forest fire was. However, the findings showed a significant discrepancy between this perception and objective knowledge. In addition, the knowledge of basic safety procedures had also much lower percentage of correct responses including a number of demographic factors analyses. In fact, these discrepancies could be seen across items that were quite basic multiple choice responses. In our opinion, if students had been asked more open-ended questions about forest fire characteristics and safety procedures, it might well have happened that the discrepancies would be even greater, perhaps much greater. This set of findings is in favor of the argument that asking children about their knowledge perception, or, to put it slightly differently, their confidence in their knowledge is not sufficient. The research, which has been done mainly with adult samples points to the role of confidence or efficacy in facilitating disaster risk reduction knowledge and preparedness (e.g., Paton, Smith, & Johnson, 2005). However, at the same time, the same research points out that no single feature is a predictor on its own and needs to be coupled with a number of known facilitators. In addition to this idea, this emerging set of findings helps understand that children and youth may misperceive their level of knowledge and, while they may feel more confident as a result, this may actually be more of false confidence not matched to actual knowledge of hazards and what needs to be done to reduce risks. Both this study and the Indonesian one demonstrate that children may have quite a significant mismatch in their belief in their knowledge and actually having that knowledge. Thus, future research examining such a mismatch might look into ways to reduce it and whether “mismatched” versus “matched” samples have better risk reduction and resilience outcomes.

In addition to the main findings, additional findings showed there were factors that moderated responses in perception and knowledge items. However, in general, there was no moderating factor to reduce significantly the mismatch between knowledge perception and actual knowledge. Nevertheless, the findings here do point to some moderating factors that appear to be useful in assisting the youth to acquire basic knowledge including demographic factors and educational modality. Taking these findings into account, they point to the ways in which education programs might be carried out. For example, young people who are older and more successful in school and then perhaps more knowledgeable about hazard-related risk reduction might serve as peer tutors for younger children and the youth. Moreover, the findings provide support to infuse DRR education approaches (e.g., Ronan & Towers, 2014) through the inclusion of a range of learning modalities that also match the youth preferences (e.g., use of video; Kurita et al., 2006), are interactive and participatory (e.g., video games supplemented with skills-focused practice; UNESCO/UNICEF, 2013), and supplement traditional classroom learning. For example, in our program of research in Australia, we have developed a video game on school drills that can be played, but it also serves as an accompaniment to

classroom learning and actual drilling practice. In the case of school drills, such combinations could then be used to overcome problems that the research has identified including the fact that rote drilling procedures may not effectively reduce risks in the manner thought (Johnson, Johnston, Ronan, & Peace, 2014).

Shiwaku et al. [47] points out that school lessons about disasters typically raise awareness of risks, but they currently do not help children learn and carry out preventive measures effectively. The survey conducted by Becker et al. [18] indicates that traditional educational approach in which students receive passive information about disasters results in a very low level of awareness and motivation for readiness. Thus, the findings here can be thought of as contributing to the idea of more active learning and skills-building modalities including active peer learning strategies and other means.

In their study, Kurita et al. [20] found that audiovisual methods of dissemination of the knowledge about tsunamis are the most effective means of transfer. Also, they specifically pointed out that students gained more knowledge with the help of the media. These findings have been confirmed here. By examining preferences of students for the manner in which they would like to learn more about disasters, it was found that the largest percentage (57.1%) preferred these means compared to other modalities, where a minority of participants showed preference.

The limitations in this study include the fact that basic perception and knowledge have been used. Thus, future research might expand the range of knowledge and skills-focused items including behavioral assessment, to learn more about possible discrepancies between perception and actual knowledge and skills. By the same token, while items were basic, they revealed in a large sample very basic knowledge/recognition memory gaps and discrepancies between what students think they know and what they actually know.

## *Conclusion*

Education about forest fires and other hazards in schools is most often linked to classroom-based knowledge including familiarity with key safety procedures (Ronan et al., 2016). Educational programs that go beyond this and include knowledge, attitude and skills for forest fires, while capitalizing on children and youth learning preferences and motivation to be active participants (e.g., through peer learning strategies), are likely to have enhanced DRR and resilience outcomes.

The presented results are important for proper initial framing of prevention programs aimed at educating young people about the dangers inherent in forest fires in such a way that any confidence derived as a function of education program participation is matched to their knowledge and abilities to actually keep them safe. Therefore, it is necessary to strengthen the traditional forms of knowledge transfer and to find a way to convey educational content to them through innovative, active learning and participatory means. It is clear that the next steps in education on the topic of forest fires must be based on the new standards. The problem should be solved using a long-term approach with the aim to get as many young people as possible to be educated about the dangers of forest fires and the necessary safety procedures for them to be able to respond adequately.

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