

## FUTURE TRENDS IMPACT ON REPUBLIC OF SRPSKA CIVIL PROTECTION

Goran Maksimovic<sup>1</sup>

<sup>1</sup>Security Research Center, Nikole Pasica 60, Banja Luka, Republic of Srpska, Bosnia and Herzegovina, gomax5575@yahoo.com

Received: 15<sup>th</sup> July 2022

Accepted: 28<sup>th</sup> July 2022

*Professional paper*

**Abstract:** Contemporary security trends are such that threats, both from natural and other hazards, are very certain, constant, and increasingly frequent. The opening of certain crisis hotspots, such as in Ukraine, also requires the reconfiguration of certain protection and rescue systems and adaptation to the resulting situation. The protection of civilians from various acts of war that affect them directly or indirectly, through the lack of fuel, food, water, and other necessities, is one of the priorities of modern protection and rescue systems. Stories about the possible use of nuclear assets moved forward the re-considering of some questions related to the shelters, stockpiles, decontamination, and similar measures that have been somewhat marginalized over the past period. This paper aims to point out the difference between civil defense and civil protection and to highlight the need for a broader concept and a return to civil defense in the context of contemporary threats.

**Key words:** civil protection, civil defense, protection and rescue, war, natural hazards

### 1. INTRODUCTION

Civil protection is a dynamic process that must respond to changes. The complexity of such changes becomes so obvious when the unfolding COVID-19 pandemic led to unprecedented changes around the world. Apart from such far-reaching events, society face constant changes due to many different factors. Because civil protection activities and organizations seek to protect the population from a broad range of hazards, a fundamental understanding of societal dynamics is required to effectively adapt the civil protection system to changing needs. One way to understand societal dynamics is to explore relevant trends, especially with respect to their positive and negative consequences for society and civil protection. Society changes and trend analyses can be used to support strategic decision-making, adaptation and optimization of civil protection systems.

In order to adapt to societal changes in Republic of Srpska, this paper aims to understand how change may impact the civil protection. This paper contributes to the continual evolution of the Republic of Srpska protection and rescue system. Trend overview focuses on interpreting some relevant trends in the context of the policies, practices and organization of the Republic of Srpska system. It aims to identify adjustments that may be advisable or necessary in order to maintain and optimize the efficiency of civil protection in the time to come. The paper is

intended as an aide to support decision-making and it therefore expressly avoids any prioritisation of trends. It describes some observable and relevant trends and from this basis, this paper discusses potential implications required to enable the Republic of Srpska civil protection system to respond to the various trends. Nevertheless, all of the trends described will be relevant in the coming years, and some other but not mentioned too, but it is therefore important that the Republic of Srpska civil protection system addresses them proactively.

## **2. REPUBLIC OF SRPSKA CIVIL PROTECTION SYSTEM**

Conceptually and terminologically, civil protection (CP) is understood as taking a set of measures, actions and activities aimed at protecting the civilian population from all phenomena that have the character of extraordinary circumstances or situations. It originates from the latin word *civis*, which means "citizen" and does not refer to his social role but to his role in protection from all kinds of dangers, natural or anthropological in origin. In Republic of Srpska, the Republic Administration of Civil Protection (RACP) performs administrative and other professional tasks related to: monitoring, harmonization and implementation of established policies and guidelines and ensuring the implementation of laws and other regulations in the field of civil protection, drafting civil protection programs of the Republic of Srpska preparation of threat and risk assessment on the entire territory of the Republic, proposing a Civil protection Plan of the Republic, collecting data on all types of phenomena and hazards that could lead to natural and other disasters for people and material goods in the endangered area, monitoring, informing and alerting, organizing, preparing and training of civil protection units at the level of the Republic, elections and conducting of scientific research projects in the field of civil protection, providing professional assistance, issuing instructions and instructions for the work of the civil protection service of local self-government units, inspection, destruction of UXO, demining, rescue from natural and other accidents, taking preventive, operational and postoperative measures in case of accidents and international cooperation. RACP is an administrative organization under direct comand and control of the Republic of Srpska Government.

According to its function and purpose, civil protection is also one of the emergency services in cases of endangering the lives and property of citizens ie in the event of crisis situations. Protection and rescue operations during crisis situations are of special importance for the Republic. Civil protection is a planned and organized part of the system of protection against natural and other disasters, which includes planning, organizing and preparing for protection and rescue. The civil protection system is unique for the territory of the Republic and is organized as such. The organization of civil protection includes: personal, mutual and collective protection, measures and tasks, coordination and management, emergency headquarters, protection and rescue commissioners, units and teams of protection and rescue, reporting and information system and other organizations trained in protection and rescue.

Civil protection is organized at the level of the Republic administration through the civil protection service in the municipality / city down to other legal entities. Emergency headquarters are organized at all levels as administrative and management bodies. Specialized units for protection and rescue are organized at the level of the Republic and the municipality / city, while the reporting and notification system is organized from the operational-communication center of the municipality / city through the regional civil protection offices to the Republic operational-communication center. Specialized civil protection units encompass the areas of: fire protection, medical assistance, veterinary and radiological-chemical-biological (RCB) protection, sanitation of the ground, rescue from rubble, destruction of UXO and demining, as well as water rescue. The use of forces and means for protection and rescue is foreseen and planned in accordance with the law. For the use of civil

protection units, the CP staffs are formed as operational-professional bodies at the level of the city / municipality and the Republic. The staffs perform their function occasionally, taking action before and after the crisis (Maksimovic, 2013).

### **3. FUTURE TRENDS DEFINITION AND SELECTION**

In this paper, term *trend* is used as a descriptor for a pattern that is likely to have an impact on the way the Republic of Srpska civil protection will evolve in the near future. The trends create issues that are observable in the present. However, many of the challenges and opportunities that the trends pose to civil protection in Republic of Srpska are likely to become more pronounced in the future. The trends are not ranked in regard to the importance. A main point is an assessment of the relevance and implications of each noted trend to civil protection. Impact hereby refers to the extent to which civil protection will be affected by the individual trends. Adaptability is the perceived need and ability of Republic of Srpska civil protection to address the challenges and opportunities that arise with the respective trends.

This trend review differs from a traditional risk analysis. Firstly, it does not aim to prioritize the importance of particular trends, rather providing information and advice that could be used by others in a decision support manner. Second, by focusing on trends, it enables an examination of the issues at hand, including an investigation of opportunities that arise from the trends. As should be expected in an open-ended, complex system, all of the trends, mentioned in this paper, are interdependent. The concluding section of the paper focuses on the importance of interdependencies between trends, and more general associated implications for the Republic of Srpska civil protection.

While some of the trends have positive implications for civil protection, others may have negative consequences. Both, urgent and slow-developing trends, are included in the review of relevant trends. The main criterion for choosing trends was a foreseeable and considerable impact on civil protection in Republic of Srpska. As it is the case after every crisis, it is important to critically review all the measures taken during the previous one within the civil protection system, and to incorporate the lessons learned into future activities. Thus, the focus of this paper is not on specific emergency but on the issue where there are relevant implications to consider.

#### **3.1. Technological trends**

##### **3.1.1. Technologies**

Technological advance today leads to convergence, a process by which traditionally unrelated technologies become integrated. They grew out of research and development ties between organizations across industries and sectors and are mostly market-driven developments. It is possible that if civil protection can adapt on these market-driven adaptations, then civil protection activities would better match the society that drives the market. Because technological convergence combines technologies, effective utilisation requires a new set of practices.

As a result of convergence, an inherent dependencies between technologies and the enabling character of some of these technologies, the development of technology tends to happen in a non-linear fashion, which reduces its predictability. The possibilities for detecting increasing with systematic monitoring of patent databases to track (both positive and negative) convergence. New technologies lead to new challenges and these challenges are observable at different scales, depending on the area. Some new technologies are useful in the context of civil protection but, on the other side, it also create challenges in the context of regulation. To

date, governance happens mainly in a siloed fashion with regulation targeted in a strongly disciplinary manner.

In general, technologies provide a variety of opportunities to engage the developmental advances across disparate fields through efficient new inventions. The combinatory power of modern technologies underlines the potential to find solutions to issues that cross existing domains. Upcoming technologies might yield substantial improvements with respect to prevention capacities. In the context of oversight of critical services, infrastructure could soon be monitored using chemical or biological sensors (microorganisms). Combined with artificial intelligence capacities, these types of sensors will likely increase prediction possibilities for more efficient critical infrastructure protection but cause some political and private issues (Kohler and Benjamin, 2020).

An long-term approach to the developments, could assist civil protection to gain most practical benefit from these developments. In order to benefit from increasing developments in technologies, long-term ties should be established among organizations, such as civil protection. At the moment, different agencies are responsible for different fields and disciplines. Given that technologies cross disciplines, developing capacities to understand how regulatory questions and problems can be addressed should be a priority with respect to this trend. Managing the cross-disciplinary nature of technologies might also be accomplished by spreading expertise across government departments. Advocating for disciplinary competencies to be spread across departments, could increase the ability of individual departments to understand and manage technologies, as necessary within a department. Concentrating competencies within departments or even departmental sections, will hinder the manage of technologies and reduce the potential to realize the opportunities they may bring in the future (Kohler and Benjamin, 2020).

### 3.1.2. Digitalization

Digitalization is the defining trend of our time because, data (information) becomes an increasingly valuable commodity. However, digitalization is not an entirely new trend. Digitalization directly or indirectly affects, or is the basis for, many of the trends identified as relevant for civil protection. This includes technologies, governance of critical infrastructures, social media, unmanned systems and urbanization. In more developing countries some other trends too. Progress in digital technological development permits ever more design processes to be undertaken virtually. The next step in the field of digital prototyping, will be the “digital twin”, the exact virtual replications of systems or infrastructure that can be tested and optimized without interfering with the real world. Many of the opportunities that digitalization offers depend on the availability of reliable, high-speed data connections with little latency. To handle the expected massive increase in the amount of data transmitted, network operators plan to implement the next generation data transmission. At the moment, the prospects for Republic of Srpska are in a way promising. Still, there are a lot of challenges to overcome in a territory as BiH, with geographical and political distinctiveness.

Digitalization brings convenience and comfort to everyday tasks, but it also poses considerable challenges for society and the civil protection system: This encompass proliferation of connected devices at all levels of society, supply chains, potential hardware espionage or software malware. With digitalization, more data are being saved digitally, increasing the number of potential targets. It raises question of information security. Digitalization may also hinder social resilience during disasters. The impact of permanent availability of these technologies leads to inability to act in case of their absence. An “analogue alphabets” are unable to deal with those kinds of situations. Digital technologies will soon boost the analysis of biometric characteristics of the population. It raises some new challenges such as privacy

rights, the lack of data protection, the enormous potential for surveilling and even controlling the population. The civil protection system already profits from digitalization on multiple levels. Digital technologies facilitate and/or enable new disaster management, preparation, protection, adaptation, response, and recovery measures. Technologies like unmanned aerial vehicles or digital triaging are already employed in the service. Digitalization provides emergency services with huge amounts of data for potential use. Close collaboration between research, civil protection authorities, critical infrastructure operators and practitioners is central to ensure adaptations of new digital technologies to the specific needs of civil protection (Building Information Modeling, 2022).

Digitalization will influence parts of society that are specifically designated to serve civil protection purposes, like shelters in case of disaster. A digital real time information system would allow responsible personnel to be informed about the remaining capacity of protective shelters, the amount and kind of people already there and other data of interest. Accessing the benefits digitalization requires a thorough cost-benefit assessment. Adapting existing solutions to the needs of disaster relief operations is a task that could, and should, be fulfilled by researchers. The civil protection should provide funding opportunities that support these developments. Overall, it is important to keep in mind that digital infrastructures are mainly operated by private companies. Close collaboration between operators and the civil protection system, including the development of new regulating standards for these operators, will be important in the next ten years.

### 3.1.3. Unmanned Systems (US)

The use of unmanned systems (US), has been a trend in civil protection for already several years. The most relevant type of unmanned systems for civil protection are unmanned aerial vehicles (UAV), often referred to as drones, and unmanned ground vehicles (UGV) but unmanned underwater vehicles (UUV) as well. Unmanned systems usually have an advantage when it comes to navigating around obstacles or when it comes to endurance. Thanks to progress in sensors, data availability and machine-learning, unmanned systems are being developed with increasing levels of automation and enhanced situational awareness, allowing operators to avoid hazardous environments. Most US already include partial automation and will likely be capable of high automation by 2030 (artificial intelligence level). Overall, the pace of progress in robotics is rapid and will likely trigger increased usage of unmanned automated systems in civil protection.

Large-scale deployment and regular use of US for civil protection purposes still depends on further development in two areas. First, power supply currently constricts flying machines due to the fact that endurance, operability in adverse weather conditions and load capacity determine successful deployment. For the near future, the most US in civil protection will have to rely on fossil fuel-driven technology. Initiatives to address this issue include hydrogen fuel cells, integrated solar panels, land-based power transmission and automated battery-switching and charging stations. Second, it is a question of regulation. In order to integrate a UAVs into the airspace, there is a need for a full service unmanned air traffic management regime (U-Space). This includes further development in this area. Aside from a rapid development, a challenges remains regarding robustness, cybersecurity and societal acceptance of the technology: Operational search and rescue teams have a strong preference for reliable and tested technologies in high-stress and high-stakes environments. Many applications still do not have the level of technology readiness to perform well under such circumstances. Critical infrastructures with a large threat area, will be hard to defend against a coordinated unmanned systems attack so they easily become extremist tools aiding acts of terrorism.

The opportunities provided by UV still have a lot to offer in terms of improved accuracy, available information, intelligence, situational awareness, regular maintenance and personal safety of relief forces: They can improve prevention through early detection and a reduction in human exposure to threats. The advantages in these situations include a reduction in time and cost of carrying out assessments, risk reduction for personnel working in hazardous environments and opportunities to inspect inaccessible areas. Search and rescue teams need to integrate information from multiple US a unified picture. The capability to integrate and analyse large amounts of data in real-time will serve Republic of Srpska in the future. Structures, such as the Operation Center should be organised to support such activities. In order to deploy UVs without losing public trust or violating privacy laws, transparent regulations should be developed. To further develop the use of unmanned systems in disaster response, collaborations between researchers and practitioners should be fostered.

### **3.2. Social trends**

#### **3.2.1. Demographic „Recession“**

Driven by increasing life expectancies and falling birth rates over recent decades, Republic of Srpska society is ageing. The share of the population aged 65+ grew from 17% in 2013 to 20,8% in 2020 (Centar za demografsko istraživanje Republike Srpske, 2021). The social and economic impacts of ageing society is somewhat cushioned through emigration. There is strong interaction between the demographic changes and ongoing changes in social norms and values in Republic of Srpska. Time pressure and increased expectations in career, education, leisure time and family, combined with a high level of mobility and urbanization, has resulted in less motivation to stay in this area, particularly among younger generations. The current trend in demographic will affect established processes and institutions in civil protection, especially with regard to recruitment, crisis management, and the allocation of resources. This is specifically implication of territorial distribution of population, depopulation trends and emigration as well as ageing trends that average age of population will be at 50,5 and that 28,7% of population will be 65+ (Marinkovic and Majic, 2018).

The demographic changes is a slow, gradual process influenced by many factors, and so, its continuation is uncertain in some cases. The ageing society trend would speed up in the future due to an increase in the number of younger emigrants from Republic of Srpska. The expected trend developments will pose a number of direct challenges to civil protection: Elderly people have the potential to be more vulnerable during crises and they also have additional needs in such situations. A challenge could be to accommodate these vulnerabilities and might necessitate additional civil protection. Diverse and growing difference in lifestyles between generations could hinder a common understanding of the responsibilities which could have an effect on the problem-solving skills within the civil protection system. An older population can cause personnel shortages in crises, as the pool of eligible and motivated candidates for the civil protection. The absence of age-appropriate functions for elderly people prevents a greater inclusion of this growing group into established structures.

Despite these challenges, there are also opportunities for civil protection. Creation of opportunities and motivational incentives for certain population groups could facilitate their participation. A broader inclusion of elderly people and women will likely increase the resilience of the society as a whole. Their skills, life experience and local knowledge is also likely to benefit the civil protection system. At the same time, their integration could improve understanding of group-specific vulnerabilities in crises, and avoid generational, cultural, or gender-based exclusion or misunderstandings. The recruitment problems this trend causes offer an opportunity to reflect on the future of the organizational form of the civil protection system. A professionalization of the civil protection system could lead to higher performance

and more efficiency, if the necessary resources were allocated. By extending the creditability of community service, more young people could be available for civil protection tasks. A closer relationship with the public through direct communication, could increase the social status of voluntary engagement by highlighting its importance for civil protection. Recruitment opportunities presented by demographic changes could be overcome by opening up the system with the creation of more roles in civil protection that are accessible to older people or women, who to date remain an underutilized talent pool. More opportunities for ad hoc engagement in loose, event-based roles that do not require much training or previous experience, could motivate more young people to take on civil protection tasks. Demographic changes must also be embraced by adjusting emergency plans and procedures, especially in urban areas, and allocating resources in a way that is better adapted to the new requirements of a changing population composition

### 3.2.2. Geopolitical Changes

The relative economic and military power is shifting from the unipolarity to multipolarity and the *Pax Americana* is coming to an end. These factors have led to discussions about the need for more strategic autonomy in Europe, if allowed. Against this background, the question arises how Republic of Srpska might be affected by these developments. Due to its limited resources and size, it depends heavily on the respect of international norms and institutions. Changes of geopolitics highlights structural factors based on territory and power centers and individual leaders perceptions of national interests and policy preferences. The degree of escalation in great power competition is hard to predict. Despite ongoing globalization, a counter-development towards more national and local approaches can be observed. Globally, a pattern of more independent, and less coordinated, foreign policies is emerging, shifting the focus from mutual interdependence to strategic autonomy.

At the same time, asymmetric and hybrid threats continue to add additional layers to the international threat situation. Inherent to these forms of threat is the targeting of civil society and critical infrastructures, where the latter are often owned by the private sector. This pattern is less accentuated in Republic of Srpska, as a considerable proportion of critical infrastructures are still owned by the state. Nonetheless, the potential targeting of civil society and critical infrastructures implies the need to adapt the corresponding threat management strategies, in particular civil protection and national defense. Supply chains for goods that are relevant to civil protection stretch around the world. In parallel, a concentration of production capacities in a few locations outside of Europe, by a decreasing number of suppliers, can be observed in some key sectors. Supply shortages of civil protection-relevant goods can therefore occur. This may be caused by unplanned production lapses, or as intended or unintended consequences of conflicts between third parties. The COVID 19 pandemic has highlighted the lack of buffers in, and the vulnerabilities of, global supply chains in the face of a sharp, worldwide increase in the demand for certain goods due to an extreme event.

Notwithstanding the substantive uncertainties and challenges, geopolitical shifts also offer opportunities: Further, the emergence of more polarized geopolitical structures creates room for manoeuvre towards more independent policy options and offers potential for new, more regional avenues of transboundary partnership. As a consequence of and reaction to the ongoing transitions in the current global security situation, an increase in security spending becomes more likely. If national security is conceptualized in an inclusive and holistic manner, incorporating the protection of civil society into framework, then the area of civil protection would gain salience in, and profit from, larger financial contributions.

### 3.2.3. Critical Infrastructure Governance

Critical infrastructures (CI) are becoming ever more interconnected and interdependent, complicating their effective governance. In Republic of Srpska, there is not much done in terms of CI governing (Maksimovic, 2022). The optimal functioning of many infrastructures is dependent on the proper functioning of other infrastructures. Their effective design, construction, maintenance, management and regulation require adaptations in governance. The increasing interconnectedness and interdependencies between critical systems will continue throughout the coming decade. This may result in practical governance challenges, as the need for critical services grows, especially the case when ownership of critical infrastructure is mixed. One of the main drivers of critical infrastructure developments is digitalization – or more precisely digitalized control and telecommunication technology (Baezner, Maduz and Prior, 2018). A growing systemic dependencies lead to growing systemic vulnerabilities. Nevertheless, large-scale infrastructure failure rarely happens. Even in a big crisis, services provided by critical infrastructures remained mostly stable and reliable.

While technological integration of critical infrastructures continues, the developments in the political sphere are not as clear-cut. As soon as disintegration becomes the leading course of action, the chances for successfully governing globalized, networked systems declines. The trend towards increasing systemic dependencies with respect to infrastructure governance is usually linked to growing risk of systemic failure and systemic vulnerabilities. This poses a set of challenges for the civil protection system: The more tightly coupled critical systems become, the higher the probability of a large-scale breakdown leading to a catastrophic damage. Infrastructure operators and local policy-makers tend to think and act within their respective system boundaries, often missing the crucial dependencies between systems and related sectors. Governing processes for critical infrastructures often follow a prefer sectorial logic *versus* holistic one. As a result, policy-making and regulation efforts are unable to keep up with growing systemic dependencies. This includes opportunities for civil protection: Complexity and tight coupling can make systems more resilient. They permit the implementation of principles like decentralization, diversity and modularization. All of these are well known to increase the resilience of technological and socio-technical systems. In tightly coupled complex systems, advanced digital technologies can also be used to automatically discriminate between different users of critical infrastructure services.

When it comes to critical infrastructures, Republic of Srpska is part of an international system with close ties to, mainly, its neighbouring countries. Successfully governing of this system is only possible if actors from different countries and sectors work together. At the same time, Republic of Srpska should look for ways to, at least partly, insulate its critical systems from the larger network in case of an unfolding cascading disruption (Maksimovic, 2022). Civil protection should invest resources in research and plans for suitable ways to insulate the most important infrastructure sectors in case of a systemic failure for a short period of time. As soon as the systems are back running, insulation does not make much sense, because it is inefficient and makes the system more vulnerable to local failures as it would be missing

### 3.2.4. Social Media

Social media subsumes a set of platforms and networks that allow the direct sharing and distribution of information between users. The rise of social media platforms in recent years is providing the opportunity to directly communicate to billions of people. The overall usage and the number of users of social media are growing steadily across all age groups – a development that is likely to accelerate over the next decade. Social media offers numerous applications in the context of civil protection, as it enables authorities to communicate directly with people and to receive feedback. Social media are dynamic and the preferred platforms



frequently change. Organizations using social media must therefore remain flexible, and be aware of the ever-changing usage behavior of relevant target groups.

The risks associated with social media have also become increasingly apparent. The use of social media can create an unprecedented spread of communication. This comes with a loss of control over the actual information once it is online, as it can easily be taken out of context, manipulated, or falsified. The quality and reliability of user generated information on social media poses a particular challenge for civil protection authorities. Through social media, civil protection authorities can increase the reach of their communication, and address desired target groups more directly. Unlike most traditional communication channels, social media allows the population to give direct feedback to civil protection authorities which could help civil protection organization to adapt their preparations and trigger aid deployments in a more targeted manner. For civil protection, social media opens up the possibility for interactive forms of communication in addition to traditional ones. This increases the criticality of correct and timely information (Lovari and Shannon , 2020).

Increased integration of social media in communication strategies, opens up new opportunities for civil protection, which should be embraced. For civil protection authorities, the major challenge is to regulate the whole process. Despite their advantages, social media should not replace other forms of communication in the civil protection system but rather, social media can act as complementary communication devices that always have traditional forms of communication as a back-up, in case digital communication fails due to power outages or signal failure.

#### 3.2.5. Urbanization

Urbanization is commonly understood as the process by which more and more people live and work in cities instead of regional and rural areas, with cities expanding as a result. This has become one of the key trends of the 21st century, with more than 50% of the human population now living in cities. Currently, in Europe 73% lives in urban areas – a figure that is expected to grow to over 80% by 2050. (World Urbanization Prospects, 2018). In Republic of Srpska, 42% of the population now lives in or around urban areas. But, negative trends of depopulation impact the urbanization, so 17 local administrative centers does not have prerequisite for being „urban“. Hoover's index of concentration indicate that urbanization in Republic of Srpska goes in to direction of concentration in regional urban centers (Marinkovic and Majic, 2018). Rapid urbanization requires rapid land planning and urban infrastructure construction. The expansion of urban areas as centres of production has climate change implications. Given their production and population density, cities should be the points of focus in the development of 'green' or 'smart' cities to ensure sustainability of development and urbanization.

In the context of civil protection, the concentration of people, industry and infrastructure in urban regional areas is likely to result in more complex disasters, due to the interconnected nature of modern cities. Growing urban populations can impact the efficiency of critical infrastructures – putting additional pressure on critical infrastructure functioning. Poorly managed urbanization may place communities to additional risk in areas that are prone to them. The continuing growth of urban areas and increasing requirement and importance of mobility make the coordination of settlement and transport more difficult, especially during crisis responses and have significant impact on evacuation. As urban areas become more complex, populous and important for economy and production, the need to organise and develop them in a sustainable and well-managed fashion becomes more important. Regionalization put additional pressure on civil protection in terms of recruiting and operational balance.

Developing responsive processes to deal with urbanization in the context of hazards will influence both land-use planning and civil protection in the future. Emergency managers should periodically reassess population movements and adapt evacuation procedures and routes accordingly. Risk and safety analyses and risk communication processes must be incorporated directly into the broader landuse planning processes, and across administrative boundaries, given the trend towards urbanization. This includes ensuring that risk management and assessment processes for critical infrastructures consider changing conditions that can shift risk exposure, particularly for vulnerable populations.

### **3.3. Environmental trends**

#### **3.3.1. Climate Change**

Although climate change predictions are marked by uncertainty, there is scientific consensus that climate change will continue to significantly impact environment and society at both global and local levels. For a small society like Republic of Srpska, climate change – and in particular global warming – results in numerous short- and long-term challenges for civil protection: The frequency of extreme precipitation events is predicted to increase in all seasons, but especially in winter. This will lead to an increase in flooding, an impairment of slope stability, and more frequent landslides. In the future, winter precipitation will increasingly fall in the form of rain instead of snow which increases the risk of flooding. More extreme heat will be particularly hard on the elderly and vulnerable people, posing a growing challenge to civil protection. Higher temperatures also foster forest fires and promote the spread of tropical infectious diseases. Concurrent extreme events could strain available resources.

Climate change can also reduce hazards and provide opportunities. Climate scenarios usually have a longer time horizon than measures in civil protection, which makes targeted adjustments on the part of authorities a challenge. At an international level, there are three key United Nations processes that link disaster preparedness and all three agreements have been ratified, and provide a framework for activities at a Republic level. Government measures in this area could be improved by promoting more active involvement of the population in precautionary everyday measures.

## **4. TREND OVERVIEW AND IMPACT**

A main idea of this trend overview is to assess the implications of each trend to civil protection in Republic of Srpska by impact, adaptability and knowledge. Impact refers to the extent to which civil protection will be affected by the trends and by influencing its operations. It is assessed that civil protection in the future will be impacted by the social media, demographics, urbanization and governance of CI and the other trends are considered to be comparatively less influential. Adaptability is to the perceived need and ability of civil protection to address the challenges and opportunities that arise with the respective trends. The greatest need for adaptability is assessed with the trends demographics, governance of CI, social media and urbanization. The other trends will require a moderate to less adaptation. The third, knowledge refers to the knowledge already available within civil protection regarding the impact of trends and the necessary capacity to adapt. The differences in existing knowledge with regards to the individual trends are more pronounced than the differences for impact and adaptability. Existing knowledge is considered greatest for the social media and urbanization followed with digitalization, demographics, geopolitical change and US. There is room for improvement in civil protection with regard to acquiring the necessary institutional knowledge and capacities to address technologies, governance of CI and climate change. The summary results of the

findings based upon expert survey for each individual trend are presented in the following graphics (Table 1).

**Table 1** : Summary of findings regarding trends

| <b>Trend</b>          | <b>Impact</b> | <b>Adaptability</b> | <b>Knowledge</b> |
|-----------------------|---------------|---------------------|------------------|
| Technology            | M             | L                   | M                |
| Digitalization        | M             | M                   | H                |
| Unmanned systems      | L             | L                   | L                |
| Demography „Recesion“ | H             | H                   | H                |
| Geopolitical Changes  | M             | M                   | H                |
| CI Governance         | H             | H                   | M                |
| Social media          | H             | H                   | H                |
| Urbanization          | H             | H                   | H                |
| Climate changes       | L             | L                   | H                |

**Legend:** L – low; M – medium; H – high;

## 5. CONCLUSION

Although all of the mentioned trends have implications for the Republic of Srpska civil protection system, the scope for civil protection actors to act varies greatly between the individual trends. However, early recognition of these trends and their impact on the civil protection system, makes it possible to build up the corresponding institutional knowledge and initiate necessary adaptative measures on time. The scope of action identified in this paper encompass the following. New technologies should be embraced as opportunities. Through the systematic and continuous identification of relevant technological advances and, where appropriate, their systematic integration into existing structures, the civil protection in Republic of Srpska could increase its efficiency and adapt its spectrum of capabilities for future needs. Both, risks and benefits, can be found in any new technology or practice. Second, the growing interconnectivity of vital areas and the resulting increase in complex risk situations, increases the importance of collaboration and cooperation between relevant actors at all levels. This requires adequate and efficient coordination and cooperation mechanisms to foster exchange of knowledge, experiences and skills. Next, growing uncertainty with respect to previously unknown threats and hazards and their potential effects, should be countered by placing more emphasis on a resilience approach. Both public and private sector actors, as well as individuals, should be considered as critical resources of civil protection. The last, a joint and coordinated approach by all components of the Republic of Srpska protection and rescue system creates trust even in uncertain times. This has become an essential prerequisite for effective action.

A continuous dialogue between authorities and the population before a crisis occurs, can establish the trust and awareness needed for a swift and efficient response in an emergency. Security organizations tend to resist changes because it is mainly perceived as instability. Overall, it is important that the Republic of Srpska civil protection does not fixate on the risks arising from the trends but also to recognize and take advantage of new opportunities in non-crisis times in order to be well prepared for forthcoming challenges.

## REFERENCES

Baezner, M, Maduz L, and Prior T. (2018). Trusting Technology: Smart Protection for Smart Cities. CSS Analyses in Security Policy 235 (November). <https://doi.org/10.3929/ethz-b-000300581>.

Building Information Modeling, Available: <https://www.autodesk.com/industry/aec/bim>

Centar za demografsko istraživanje Republike Srpske, (2021). Demografsko starenje stanovništva Republike Srpske u periodu 2013-2020.godine, Available on: [www.cdi-bl.or](http://www.cdi-bl.or)

Kohler, K. and Benjamin, S. (2020). Integrating AI into Civil Protection. CSS Analyses in Security Policy No. 260 (April). <https://doi.org/10.3929/ethz-b-000408269>.

Lovari, A. and Shannon A. B. (2020). Social Media in Disaster Communication: A Case Study of Strategies, Barriers, and Ethical Implications. Journal of Public Affairs. <https://doi.org/10.1002/pa.1967>.

Maksimovic, G. (2013), Model upravljanja kriznim situacijama u Republici Srpskoj, Fakultet za bezbjednost i zastitu, Banja Luka.

Maksimovic, G. (2022), Koncept privatno javnog partnerstva i zastita kritične infrastrukture, Proceedengs of Diskurs o kritičnoj infrastrukturi, 83 – 103, ISBN 978-99976-945-1-5, Visoka poslovno tehnicka skola., VPZS i BIC, Doboj.

Marinkovic, D. and Majic, A. (2018). Stanovništvo Republike Srpske – demografski faktori i pokazatelji, Prirodno matematički fakultet, Banja Luka.

World Urbanization Prospects 2018, (2018). Department of social and economic affairs, Population dynamics, Available on: <https://population.un.org/wup/Download/>. Accesed on June 27, 2022.