Security of Large Urban Centres

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Abstract. *One of the processes characterising the changes in the modern world is the intense urbanisation of public space. Generally speaking, this is manifested through an increase in the urban population rate in a given area. From the point of view of the security of large urban centres, the most important issue is the growing concentration of population in the current area. However it is equally important to ensure security in the context of its spatial development, i.e. in an ever-expanding zone that creates an agglomeration. When seen like this, urbanisation is associated with significant challenges for the institutions responsible for security both in quantitative and qualitative terms. Modifications of security systems for large urban areas forming the agglomerations should take into account all of the following: demographic, economic, and socio-cultural factors, and, finally, the changes in the lifestyle of the inhabitants of these agglomerations. While searching for directions of institutional and functional changes for security systems, it seems important to characterise contemporary agglomerations, and to identify common features and define the most serious threats. These common features are primarily high population density and infrastructure concentration, including critical infrastructure systems. The threats resulting from this are primarily threats to public order and security, as well as terrorist threats, and, in the area of technical functioning of the agglomeration, a widespread power failure, a so-called 'blackout', resulting in an avalanche of secondary hazards. These threats seem to be a direct consequence of the metropolitan nature of the region where they occur.*

Introduction

Transformations in the security environment of the modern world are multidimensional. Globalisation, integration, and computerisation are just some of the processes that influence the changes in the lifestyle of modern people. Socio-economic development, including rapid urbanisation of the areas adjacent to large urban and industrial centres, has led to the formation of mono- and polycentric agglomerations[1]. The agglomerations develop qualitatively and spatially, as they are a functional phenomenon and it is difficult to confine them within rigid boundaries of basic units of territorial division. Nevertheless, the commonality of interests, as well as economic, social and cultural ties encourage common efforts and provide a firm basis for solidarity in caring for the safe existence and development of the residents, i.e. for ensuring security for all inhabitants of the agglomeration. The conditions we face in Poland make this task rather difficult, because it requires the re-modelling of the current security management system, rigidly based on the principle of primacy of the territorial system. The security tasks

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[1] Monocentric agglomerations are centres operating on the basis of one large city (for example Warsaw agglomeration). Polycentric agglomerations are areas consisting of several cities of similar size (for example Upper Silesia region).

are carried out by various entities based on scattered legal regulations.[2] The public administration plays a key role in managing security whereas specialised formations such as the State Fire Service and the Police directly ensure the safety of the population.

The tasks of public administration in the area of security — implemented primarily as part of the crisis management system — are based, as already mentioned, on the principle of the primacy of the territorial system. Therefore, the crisis management system in Poland operates on the basis of individual levels of administrative division. This seems to be a reasonable solution due, among other things, to the fact that it assigns responsibility to the competent public authorities. A specific exception in this system is the organisation of crisis management in the cities with poviat rights, for example, in the Capital City of Warsaw, where the tasks assigned to district heads, mayors and rural commune heads under the Act on *Crisis Management*[3], are carried out by a single entity reporting to the City Mayor. Such an entity in Warsaw is called the Security and Crisis Management Office. The activity of this office is highly valued by specialists implementing the tasks in the field of crisis management in practice. Warsaw Metropolitan Police watches over the safety of 3.5 million residents of Warsaw, maintaining public order within an area of nearly 6,000 square kilometres. These tasks are carried out by means of: seven district police headquarters, four specialist police stations, the Police Prevention Department and nine county police headquarters, which extend far beyond the administrative boundaries of the capital city of Warsaw. This can be an inspiration for a scientific reflection on the place and role of institutions responsible for security and for the search for a model solution for other agglomerations.

If we assume that agglomerations in Poland operate in similar conditions, it seems possible to use a common crisis management model for them. Such a model would fit well into the complex administrative structure of the agglomeration in terms of the organisational system. On the other hand, in terms of the functional system, it should take into account effective use of the potential of the central and local government administration, as well as the services and institutions responsible for ensuring security in the agglomeration and the use of the synergy resulting from their combined efforts. Of course, the differences between these types of agglomerations should be also considered. For a polycentric agglomeration, the criteria for the selection of the leading city and its significance in the agglomeration's security management system will be important. From a scientific point of view, in the case of large urban agglomerations this is related to a specific flexibility of crisis management rules through the liberalisation of the principle of the primacy of the territorial system and the principle of the responsibility of public authorities in favour of strengthening the principle of the primacy of management by a single individual.

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[2] Kitler W, *Bezpieczeństwo narodowe RP. Podstawowe kategorie. Uwarunkowania. System.* Warsaw: Wydawnictwo Akademii Obrony Narodowej, 2011, pp. 251–252.

[3] The Act of 26 April 2007 on Crisis Management (Journal of Laws 2017.209, unified text).

Characteristics of Large Urban Centres

In today's globalised world, the terms "agglomeration" and "metropolis" are used very often. They are perceived as a phenomenon of urbanity and reflect the growing process of urbanisation and internationalisation. This is a phenomenon that brings spectacular benefits, but also many doubts. The activity of the residents, social activists, specialists and researchers meets with real urban policy, which is entangled in many dangerous situations.

Current reality makes many Polish cities use the name of agglomeration or metropolis or try to obtain such a name, despite the fact that they do not meet the conditions for this nor have the functions to indicate this. This gives rise to a specific terminological inaccuracy, which is reflected in the opinions of many researchers and leads to different conclusions.[4] It is also difficult to establish a reliable (correct) number of Polish metropolises and agglomerations as a result of the subjective criteria adopted for granting such a status, depending on individual assumptions and the views of individual scientists.

The term "agglomeration" derives from Latin "agglomeratio" which means accumulation. It is assumed in the doctrine that the urban agglomeration is a morphological unit forming a coherent set of interconnected settlement units, created as a result of the concentration of buildings and developments. Agglomerations are usually created by settlement units of separate administrative cells. In urban planning, this term is understood as an area of intensive development, characterised by a high density of population temporarily or permanently residing in a given territory.[5] Agglomerations are characterised by a significant movement of people and goods and exchange of services. The common nomenclature assumes that the agglomeration is a concentration of neighbouring cities and villages, which constitute an interconnected system by integrating or complementing the various forms of infrastructure present in these localities and mutually benefiting from the potential and resources available to them. Jerzy Parysek claims that *the agglomeration is a functionally coherent metropolitan system of many settlement units strongly*

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[4] *Cf.* Smętkowski M, Jałowiecki B, Gorzelak G, Obszary Metropolitalne w Polsce — diagnozy i rekomendacje. *Studia Regionalne i Lokalne Uniwersytetu Warszawskiego*, No. 1 (35)/2009. Warsaw, 2009, p. 52–54. *Also:* Smętkowski M, Nowe relacje między metropolią i regionem w gospodarce informacyjnej. *Studia Regionalne i Lokalne Uniwersytetu Warszawskiego*, No. 4 (7). Warsaw, 2001, pp. 83–101. *Also:* Rykiel Z, Koncepcje i delimitacje wielkomiejskich form osadniczych w Polsce, [in:] Jażdżewska I (Ed.), Współczesne formy osadnictwa miejskiego i ich przemiany, pub. XV Konwersatorium Wiedzy o Mieście, Łódź, 2002, pp. 12–17. *Also:* Maik W, Pojęcie metropolii a problem badania funkcji metropolitalnych, [in:] Jażdżewska I (Ed.), Funkcje metropolitalne i ich rola w organizacji przestrzeni, pub. XVI Konwersatorium Wiedzy o Mieście. Łódź, 2003, pp. 9–18. *Also:* Parysek J.J, Metropolie: metropolitalne funkcje i struktury przestrzenne, [in:] Jażdżewska I (Ed.), Funkcje metropolitalne i ich rola w organizacji przestrzeni, *op. cit.,* pp. 19–40. *Also:* Czyż T, Koncepcja aglomeracji miejskiej i obszaru metropolitalnego w polskiej geografii miast, [in:] Maik W (Ed.), Aglomeracje miejskie w Polsce na przełomie XX i XXI wieku. Problemy rozwoju przekształceń strukturalnych i funkcjonowania. Bydgoszcz: Wydawnictwo Uczelniane Wyższej Szkoły Gospodarki, 2009, pp. 15–30.

[5] Markowski T, Marszał T, Metropolie, obszary metropolitalne, metropolizacja: problemy i pojęcia podstawowe. Warsaw: Komitet Przestrzennego Zagospodarowania Kraju PAN, 2006, p. 16.

linked by the movement of people, goods, money and information. And it includes a nodal centre and units with a lower level of centrality called the suburban zone.[6]

In order for an urban agglomeration to become a metropolitan area, it must fulfil certain conditions. First of all, it should develop spatially and demographically and combine urbanised areas, since metropolitan areas are characterised by functional and economic integration.[7] The metropolitan area comprises a zone with a significant direct and permanent impact and areas with potential development opportunities. It is a place that attracts investments and sets new development trends. The study of these areas is an important element contributing to the recognition and identification of the processes of shaping modern European space.[8] In order for a metropolis to emerge and a metropolitan area to be created, certain types of features and functions are required, as not every large city (in terms of population) is called a metropolis. These functions should be understood as higher-order goods and services of a supra-regional, national and international character. It is important that a given feature is also found in other European metropolitan areas or in metropolitan areas around the world, for example in Warsaw, Katowice, Tokyo or New York. The boundaries of the metropolitan area are delimited by communes with a sufficiently high degree of centralisation of these functions. Therefore, the metropolises are the cities characterised by global economic, financial, scientific, cultural and media potential and strong authority. They export their ideas, solutions and standards to other world cities, at the same time acting as international centres, the so-called global nodes.[9] The population factor is an important criterion in the European Union's studies, which is why *the metropolis is defined as an urban agglomeration (conurbation) with a population of at least 0.5 million inhabitants and characterised by a high level of commuting to work. In practice, the world's largest and most important metropolises have huge population potential, for example New York has 8.3 million inhabitants within the city limits, and the metropolitan area has 20.1 million inhabitants. Similarly, Tokyo has a population of 8.6 million inhabitants, while the metropolitan area is inhabited by as many as 31 million people (…).*[10] The quality criterion is equally important. It states that the metropolis should be distinguished by appropriate quality features, such as the presence of head offices of particular companies, branches of international companies, diplomatic missions, regularly organised international exhibitions or congresses.

In conclusion, it is necessary to emphasise the already mentioned lack of conceptual homogeneity. However, there is no doubt that the metropolis is a major

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[6] Parysek J.J, Aglomeracje miejskie w Polsce oraz problemy ich funkcjonowania i rozwoju, [in:] Parysek J.J, Toelle A (Eds), Wybrane problemy rozwoju i rewitalizacji miast: aspekty poznawcze i praktyczne. Biuletyn Instytutu Geografii Społecznej — Ekonomicznej i Gospodarki Przestrzennej Uniwersytetu im. Adama Mickiewicza w Poznaniu. Seria: Rozwój regionalny i polityka regionalna 5. Poznań, 2008, p. 30.

[7] Markowski T, Marszał T, *op. cit.*, pp. 14–15.

[8] Zuzańska-Żyśko E, Funkcje metropolitalne w Górnośląskim Obszarze Metropolitalnym. *Studia Regionalne i Lokalne*, No. 2 (48) /2012, p. 39.

[9] Smętkowski M, Gorzelak G, Kozak M, Olechnicka A, Płoszaj A, Wojnar K, Europejskie metropolie i ich regiony. Od krajobrazu gospodarczego do sieci metropolii. Warsaw: Scholar Spółka z o.o., 2012, p. 44.

[10] E. Zuzańska-Żyśko, *op. cit.*, p. 42.

component of the metropolitan area, i.e. a large mono- or polycentric urban settlement structure composed of many settlement units and areas with a high degree of urbanisation.

The importance of cities and metropolitan areas is a reason behind many of the studies carried out within the framework of European Union programmes, such as *the European Spatial Planning Observation Network (ESPON)*[11] *and the Innovation & Environment Regions of Europe Sharing Solutions (INTERREG).*[12] Since 1998, a broad compendium of information in this field has been made available through the *Urban Audit* project, which collects statistical data on individual cities. The analysis of the urban system in the European area has led to the separation of the *Functional Urban Area (FUA) and the Metropolitan European Growth Areas (MEGAs)*. They were chosen based on the size of their population and their particular transnational functions: transport, industrial, economic (knowledge-based), control and management functions. It was observed that London and Paris serve as the so-called global nodes as the most competitive cities in Europe. Four main metropolitan categories have been defined within this EU classification. Berlin, Rome and Madrid, for example, have been included in the first and second category of metropolitan centres. These are the so-called "engines of Europe" and strong centres, which do not include any Polish city.[13]

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[11] ESPON is a spatial development research programme covering the entire territory of the European Union, Iceland, Liechtenstein, Norway and Switzerland. ESPON is the European Spatial Planing Observation Network for Territorial Development and Cohesion. It is co-funded by the European Regional Development Fund and its objective is to provide the politicians and practitioners with systematic new and comparable knowledge on trends in the European territorial development and the impact of the policies implemented on European regions and territories at the Community, national and regional level. This knowledge is to directly support the formulation and implementation of strategic tasks. The ESPON programme is intended to provide knowledge beyond the standard, traditional analyses drawn up by the European Commission. In total, more than 130 research institutions from all over Europe are involved in research projects, as well as the support and coordination activities of the Programme. The ESPON Contact Points form a network and serve as links between practitioners and researchers in all Member States. The task of ministerial representatives from all countries involved in the ESPON Programme and representatives of the European Commission in the Monitoring Committee is to ensure the practical dimension of the conducted research. *Electronic source:* http://www.espon.pl/strona/program_espon, *accessed:* 03.12.2017. *Also:* http://www.ewt.gov.pl/strony/o-programach/przeczytaj-o-programach/programy-europejskiej-wspolpracy-terytorialnej/espon-2014–2020/, *accessed:* 09.12.2017.

[12] INTERREG includes international programmes within the framework of European Territorial Cooperation (ETC). The support is given to actions carried out jointly by partners from different countries, which is conducive to establishing partnerships between actors from all over Europe. Poland gained its first experiences in cross-border cooperation even before its accession to the European Union, mainly within the framework of the PHARE CBC Programme. It participates in many CBC programmes, such as transnational programmes, interregional cooperation programmes, cross-border programmes. *Electronic source:* http://www.ewt.gov.pl/strony/o-programach/przeczytaj-o-programach/programy-europejskiej-wspolpracy-terytorialnej/, *accessed:* 12.01.2017.

[13] Smętkowski M, Gorzelak G, Kozak M, Olechnicka A, Płoszaj A, Wojnar K, *op. cit.*, pp. 46–54.

As part of the ESPON 1.1.1 project *"The Role and Specific Situation and Potentials of Urban Areas as Nodes In the Polycentric Development"* European urban centres have been classified into four categories of Metropolitan European Growth Areas (MEGAs). Among the 76 MEGAs, eight metropolitan areas from Poland have been distinguished. Warsaw is a potential metropolis, included in category 3. The remaining seven were included in category 4, i.e. poorly-formed metropolises, and these are: 1) Cracow, 2) Gdańsk and Gdynia, 3) Szczecin, 4) Poznań, 5) Wrocław, 6) Łódź and 7) Katowice along with the Upper Silesia conurbation. Scientific research on this subject has been conducted in Poland since 1968 and it still shows different divisions depending on the adopted criterion, different number of metropolises and spatial scope of the surrounding metropolitan areas.

The Poland's largest cities are part of urban complexes, forming mono-centric or poly-centric agglomerations mainly with one big central city. A characteristic feature of such a city is its size, high level of development and the richness of its functions. There are also poly-centric agglomerations in Poland, consisting of several urbanised cities, which are quite diverse and centralised, but none of them dominate.

Threats Specific to Metropolitan Areas

Though intuitively understandable, the concept of threat is defined in scientific literature in various ways. Bolesław Balcerowicz sees the relation between threat and security. In his opinion, a threat is a situation in which there is an increased probability of creating a state of danger to society, i.e. insecurity.[14] In turn, *Słownik terminów z zakresu bezpieczeństwa narodowego [Dictionary of Terms in the Field of National Security]* defines a threat as a wide range of random or intentional events, which have a negative impact on the functioning of political and economic structures of the state, on the living conditions of the population and on the state of the natural environment.[15] A rather universal definition is given by Waldemar Kitler, who perceives a threat as a *set of internal and/or external circumstances that may cause a state of danger to a given entity (they are the source of such a state).*[16] Below is a description of three selected types of threats, which seem to be the most typical for metropolitan areas.

Terrorist threats. Terrorism is a broad concept to describe criminal activity committed most often with the use of weapons or explosives. In the body of literature in the field of security sciences, terrorism is defined in many ways. One of the most universal definitions states that *terrorism is a form of violence which involves deliberate extortion or intimidation of governments or certain social groups for political, economic or other purposes.*[17] The link between terrorism and crime, and organised crime, in particular, seems unquestionable. However, there is an important difference

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[14] Balcerowicz B, Wybrane problemy obronności państwa. Study material of Akademia Obrony Narodowej. Warsaw, 2002, p. 50.

[15] Słownik terminów z zakresu bezpieczeństwa narodowego, BBN. Warsaw, 2000, p. 89.

[16] Kitler W, *op. cit.,* p. 60.

[17] Słownik terminów z zakresu bezpieczeństwa..., *op. cit.,* p. 109.

between an "ordinary" offence and terrorist offences. It is based on the intention of the offender, i.e. the reason why (s)he commits a criminal act. In the case of terrorism, this will always be the "intimidation", as mentioned in the definition.

Under the Penal Code, *a terrorist offence is a criminal offence punishable by a maximum term of imprisonment of at least five years, committed for the purpose of: 1) serious intimidation of many people, 2) forcing a public authority of the Republic of Poland or another country or an organ of an international organisation to undertake or abstain from certain activities, 3) causing serious disturbances in the system or economy of the Republic of Poland, another country or an international organisation — and also a threat of committing such an act.*[18]

Terrorist attacks are generally carried out according to specific rules, and the victims are often random individuals (being occasional targets) or carefully selected representative groups, or single symbolic targets. Acts of terror are intended to create fear and horror that directly or indirectly lead to the achievement of an essential objective. This may include, for example, political change, or expression of dissatisfaction of a part of society with the prevailing social or economic system. A terrorist attack is an instrument, measure and strategy used by an individual who fights in defence of his/her values, ideas, interests and objectives when other forms and tools are deemed to be unavailable or ineffective. This type of attack is a method of fighting used by people, communities, and non-state actors disregarding the legal and political systems adopted by other international communities.

Terrorism is one of the ways in which citizens of a country can be manipulated and a method of communication between the victims, terrorists, and their main objectives.[19] This communication is the so-called "chain of terrorism", in which certain stages follow one another at the right moment. At the first stage, acts of terror occur in the form of attacks, which result in enormous casualties and material damage. The second stage is characterised by widespread fear and panic among citizens, resulting in a strong sense of insecurity. At the third stage, there is a further social response to the immediate consequences of terrorism — an overpowering fear can lead to submissiveness and obedience to terrorists. The final fourth stage consists in achieving the intended main objective, which is often a political change. The best solution in the case of an act of terrorism is to break the "chain of terrorism" immediately after the first phase, but for this to happen, a society must be strong, conscious, well-organised and prepared. Public institutions should be adequately protected and the relevant services must be well trained.[20]

Terrorism is an asymmetric threat, where a theoretically weaker entity (e.g. a non-state actor) confronts a much stronger and well-organised entity (e.g. a state). This threat became particularly significant and much-publicised following the attack of September 11, 2001 on the World Trade Center and the Pentagon in the United

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[18] The Act of 6 June 1997, the Penal Code, Journal of Laws 1997, No. 88, item 553, as amended, Article 115 § 20. This article is also referred to in the Act on Crisis Management, in which a terrorist event is defined as a situation arising from the act specified in Article 115 § 20 of the Act of 6 June 1997, the Penal Code (Journal of Laws No. 88, item 553, as amended) or a threat of such an act, which may lead to a crisis situation.

[19] Horgan J, Psychologia terroryzmu. Warsaw: Wydawnictwo Naukowe PWN, 2008, p. 22.

[20] *More on this in*: Crenshaw M, Explaining Terrorism. Causes, processes and consequences. London-New York: Routledge, 2011.

States. This initiated a series of explosions around the world: the attack on the Dubrovka theatre in Moscow — 2002, the Madrid bombing — 2004, the attack on the school in Beslan — 2004, the London bombing — 2005, the Sharm el-Sheikh bombing (Egypt) — 2005, Iraq bombings — 2009, Mogadishu bombing — 2011, a series of attacks in Paris — 2015, an attack in Brussels — 2016.

Poland has not yet experienced the tragedy of a serious terrorist attack, although some threats have emerged. In 2004, Al-Tawhid, one of the leaders of Al-Kaida, who assumes the right to represent this organisation in Europe, sent a message to Poles requesting them to withdraw their troops from Iraq: *[We request] the Polish government, the Poles, and, in particular, the despicable Prime Minister, Marek Belka to withdraw their forces from Iraq, or you will hear the explosions tearing your country apart when we so desire. Hear us, Poles, we are warning you for the last time.*[21] Such a threat must be taken seriously, particularly in the capital city, where the most important state institutions, including the headquarters of the government, are located.

In addition to commonly used explosives, the attackers also use other solutions in terrorist actions. One of them was the use of civil aircraft as a means of attack during the aforementioned attack on the Twin Towers and the Pentagon in the United States. Chemical, biological or radioactive agents, commonly referred to as weapons of mass destruction (WMD)[22], constitute a serious threat in the hands of terrorists. Among these, the biological agents are most likely to be used by terrorists in urban agglomerations to contaminate food, water or consumer products.[23] They may also attack by contaminating the air, out in the open, or by introducing a pathogen into ventilation ducts.[24] Inventories of toxic industrial agents available in the territory of the planned attack can be also attractive to terrorists. The use of chemical weapons[25] or toxic industrial agents and other poisonous chemicals is primarily associated with the intention to increase the number of casualties, and that is why the attack would take place in public facilities and even in entire urban agglomerations. So far nuclear weapons have remained beyond the reach of terrorist organisations. International control of the movement of radioactive materials is a major obstacle to their acquisition.[26] There have been attempts to obtain such weapons, for example, from the resources of countries with unstable power structures. Weapons of Mass Destruction may be handed over to the terrorists

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[21] Zagrożenie atakami terrorystycznymi w Polsce. Raport-2006 i Aneks do raportu 2007. Collective work published by Centrum Studiów i Prognoz Strategicznych Wyższej Szkoły Studiów Międzynarodowych w Łodzi, p. 5.

[22] *Cf.* Kościuk L, Dlaczego terroryści pragną wejść w posiadanie broni masowego rażenia, [in:] Śladkowski S (Ed.), Terroryzm a broń masowego rażenia. Warsaw: AON, 2003, pp. 17–20.

[23] Adamski J, Nowe technologie w służbie terrorystów. Warsaw: TRIO, 2007, p. 81.

[24] Płusa T, Zagrożenie bronią biologiczną. Aerozolowy wariant bioterroryzmu a bezpieczeństwo państwa, [in:] Sienkiewicz P, Marszałek M, Świeboda H (Eds), Metodologia badań bezpieczeństwa narodowego. Bezpieczeństwo 2010, Volume 1. Warsaw: AON, 2010, p. 101.

[25] *More on this subject in*: Krauze M, Nowak I, Broń chemiczna. Ministry of National Defence. Warsaw, 1985.

[26] Preus M, Czy i jak można zdobyć broń jądrową do celów terrorystycznych?, [in:] Śladkowski S (Ed.), Terroryzm a broń masowego rażenia: diagnoza, poglądy, wnioski, Zeszyty naukowe Akademii Obrony Narodowej. Warsaw, 2003, pp. 111–122.

by state officials[27], disloyal to their own government. Even assuming real difficulties in obtaining nuclear weapons by the terrorists, an attack with radioactive material cannot be ruled out.

Cyberterrorism should be also mentioned when analysing individual terrorist threats. This may be reflected in attacks on IT systems to force fulfilment of certain requirements. Organised crime organisations, including terrorist organisations, often use the public internet connection network to communicate and even coordinate their criminal activities in different parts of the world. Internet links are used to provide information to any international community of their choice, or to carry out propaganda campaigns and even operations aimed at psychological intimidation.

In conclusion in respect of this section on terrorist threats, it should be stressed that these threats should be the centre of attention, in particular, of the institutions and authorities responsible for the security of agglomerations, including crisis management authorities. They should be studied, and considered carefully, at different levels. We are only in the second decade of this century, and these phenomena are already called the social pathology of the 21st century.[28]

Threats to the energy system — "blackout". The development of civilisation, including technological development, has led to a situation in which people cannot imagine a life without access to electricity. A power shortage lasting just few hours paralyses housing estates, cities and even countries. This threat is commonly referred to as "blackout", which is associated with a break in the operation of the power system, causing power outage in the grid over a significant area. Witold Skomra defines the "blackout" *as an extensive failure of the power system or its parts, together with the social and economic consequences of power outage.*[29]

From the point of view of security of a large urban agglomeration, 'blackout' should be considered primarily in the context of threats to critical infrastructure. This concept covers the systems that include: facilities, equipment, installations and services essential for the security of the state and its citizens. In particular, critical infrastructure includes the following systems: 1) energy supply, energy resources and fuels; 2) communications; 3) ICT networks; 4) financial systems; 5) food supply; 6) water supply; 7) health care systems; 8) transport; 9) rescue services; 10) systems ensuring continuity of public administration; 11) production, storage, and warehousing of chemical and radioactive substances, including pipelines of hazardous substances.[30]

One of the most important motivators to undertake systemic protection of critical infrastructure was the energy "blackout" of 14 August 2003 on the North American continent. On the borderland between the USA and Canada, there

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[27] *See:* Szczurek T, Konflikty zbrojne. Problematyka filozoficzno-moralna. Wojskowa Akademia Techniczna. Warsaw, 2009, pp. 148–157.

[28] *See:* Rutkowski C, Terroryzm — patologia społeczna XXI wieku. Nowe wyzwania dla międzynarodowego bezpieczeństwa, [in:] Gotowała J (Ed.), Terroryzm — rola sił zbrojnych w zwalczaniu zjawiska. Warsaw: AON, 2006.

[29] Skomra W, Ochrona infrastruktury krytycznej w systemie zarządzania kryzysowego, [in:] Tyburska A (Ed.), Ochrona infrastruktury krytycznej. Szczytno: Wyższa Szkoła Policji, 2010, p. 210.

[30] The Act of 26 April 2007 on Crisis Management, *op. cit.*, Article 3 (2).

were large fluctuations in energy levels in the power system which resulted in the automatic shut-down of several dozen power plants. Over 50 million people living, among others, in: New York, Detroit, Toronto and Ottawa had to get by without electricity for more than 20 hours. The failure forced the closure of all airports in the region. Trains stopped in the middle of their routes, lifts stopped in the buildings, there was chaos in traffic due to the lack of traffic lights. This led to the so-called cascade effect, characterised by the fact that the destruction or failure of one critical infrastructure system results in the discontinuation or limitation of other infrastructures.[31]

This type of event has also taken place in Poland, although on a much smaller scale, most often as a result of extreme meteorological events. One of the examples is the power failure of 8 April 2008 in Szczecin, which cut off electricity to the left-bank part of the city and several dozen towns in the region. There were serious disruptions to the functioning of the water and sewage system. School classes were cancelled, most shops closed, banks did not operate. The city was stuck in traffic chaos. Crime risk increased considerably.[32] Another example is related to the sequence of events triggered by a huge tornado that passed over parts of the Opole, Silesian and Lodz voivodeships on August 15, 2008. At that time, in the Czestochowa region alone, 20,000 people were left without electricity.[33]

The Warsaw agglomeration struggled with the effects of "blackouts" several times. In November 2004, a major storm caused the failure of an electrical insulator at the distribution point in Wierzbno, which was established in 1968. As a result, the nearest power supply points were switched off for more than two hours and the residents of five Warsaw districts had no electricity. Shopping malls were closed, and the trams, metro and trains stopped. It was one of the biggest failures of such kind in Warsaw and even in Poland. A few months later, there was a shortage of electricity in the Mokotów district, and in 2005, power outage paralysed the Okecie airport. Another power failure occurred at the Central Station and the Srodmiescie station on 22 June 2011. There was a power outage, and as a result the fire brigade had to evacuate the passengers, illuminate the exit routes and help people to get out.

It is impossible to fully protect the cities from "blackout", but action should be taken to minimise the impact of such events and to switch power systems to alternative power sources. However, the examples of the last few years show that it has not been possible to develop a fully effective prevention system. The threat appears suddenly and causes chaos in the urban agglomeration. It is not easy to eliminate the causes that result in the unsatisfactory condition of Polish energy industry. The problem lies in the ageing and unmodernised power units, the lack of adequate financing for the electricity grid and cross-border connections that

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[31] Bryczek P, Szczurek T, Zadania administracji publicznej w świetle Narodowego Programu Ochrony Infrastruktury Krytycznej, [in:] Gałecki A, Kurkiewicz A, Mikołajczak S (Eds), Paradygmaty badań nad bezpieczeństwem. Infrastruktura krytyczna w procesie zarządzania w sytuacjach kryzysowych. Poznań, 2014, p. 268.

[32] Skomra W, *op. cit.,* p. 210.

[33] Szczurek T, Od deskrypcji do antycypacji wykorzystania potencjału militarnego w kształtowaniu bezpieczeństwa nowoczesnych wspólnot państwowych wobec rozwoju zagrożeń niemilitarnych. Warsaw: WAT, 2012, pp. 127–128.

prevent the import of significant quantities of energy. The internal grid is unsuitable for the amount of energy purchased, and the demand for it is still growing[34].

The need to create a mechanism for the protection of critical infrastructure was again recognised by the authors of the National Security Strategy of the Republic of Poland of 2014, who stress that it is very important to ensure conditions conducive to the protection of critical infrastructure, including systems and elements affecting the security of the state, citizens, as well as efficient functioning of the public administration bodies and entrepreneurs. The authors of the Strategy stressed that this obligation rests on the operators and owners of critical infrastructure, supported by the potential of public administration. *An innovative approach is being implemented in this respect in Poland, based on the principles of stakeholder co-responsibility, enhanced cooperation and mutual trust. The activities of the state consist in launching the crisis management system, if required, in the case of disruption of critical infrastructure, as well as in raising awareness, knowledge and competence and promoting cooperation in this area.*[35]

The provisions of the aforementioned Act on Crisis Management, which has created legal grounds for the *National Critical Infrastructure Protection Programme*[36] issued by the Council of Ministers, correspond with such a basic concept.

Threats to public order and public security. The issue of public order and public security covers a broad spectrum of meanings.[37] These terms include the protection of human life and health, and the protection of property against illegal activities. It also means ensuring order in public facilities, overseeing road traffic, rail and water transport and measures aimed at preventing crime, misdemeanours and criminogenic phenomena, as well as cooperation in this field with government administration bodies, local government and social organisations.

It is worth noting that these activities also concern the detection of crimes and offences, prosecution of perpetrators, verifying compliance with the provisions of law, cooperation with police forces of other states and international organisations within the framework of the agreements concluded. These tasks are carried out mainly by the authorities specified in the relevant laws, including special forces, the police and law enforcement services.

The threats to the order and public security in Warsaw should be considered in terms of the specificity of the capital city, manifested, among others, in the location of the most important state institutions, financial institutions and diplomatic missions. Moreover, the Warsaw agglomeration is the largest shopping centre and

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[34] The issues related to the energy sector are regulated by the Energy Law Act of 10 April 1997, Journal of Laws 2012, item 1059, as amended.

[35] National Security Strategy of the Republic of Poland. Warsaw, 2014, p. 35–36.

[36] Resolution No. 210/2015 of the Council of Ministers of 2 November 2015 on the adoption of the National Critical Infrastructure Protection Programme, taking into account the Resolution No. 61/2016 of the Council of Ministers of 1 June 2016 amending the Resolution on the adoption of the National Critical Infrastructure Protection Programme.

[37] Public safety is understood as a specific factual state, while public order is related to the tasks and activities of state administration bodies. — Cieślarczyk M, Kultura bezpieczeństwa i obronności. Uniwersytet Przyrodniczo-Humanistyczny w Siedlcach. Siedlce, 2011, p. 185.

transport hub of the country with the largest number of inhabitants and highest population density.[38]

Threats to public order and public security have negative consequences in terms of: 1) health and life of the citizens, 2) disruptions in road, rail, air or water traffic, 3) disruptions in the functioning of critical infrastructure facilities of the city, 4) property loss, 5) environmental pollution.[39]

The sources of threats to public order and public security lie in many factors, such as high levels of unemployment, economic diversification of society, an increase in external migration and the weakening of social ties. In addition, there is a perceived lack of sufficient control of access to firearms, frequent changes and imperfections in the law, a low level of effectiveness in implementing the programmes related to the prevention of social pathologies, including the fight against crime. Public security threats are often linked to drug offences, criminal offences, and economic offences and illegal border crossings.

For example, drug addiction is a dangerous and growing social pathology. In recent years, there have been some changes in the structure of drug use patterns, characterised by an increase in the consumption of synthetic drugs, the emergence of replacements to drugs, and narcotic drugs that are easy to obtain and consume. Poles more and more often use addictive antidepressants, their distribution and circulation have gained popularity and sometimes even social acceptance.

A specific indicator of the country's state of internal security are criminal offences, which are dominated by crimes against property, usually committed without the use of violence on a person. Car thefts, burglaries and thefts are particularly common in this category of offences.

Large urban agglomerations are also exposed to flow of migrants. Illegal migration resulting mainly from national, ethnic and religious conflicts and unstable political, economic and financial situation belongs to the group of border offences, but its effects are felt throughout the country. The main problem related to illegal migration lies in crossing the border with someone else's or falsified documents, smuggling of goods or falsifying control stamps for the purpose of legalising one's stay.

The organisation of mass events requires particular attention from the crisis management authorities. The main responsibility for the safety on site and during the event lies with the organiser, who must meet the following requirements: 1) ensure the safety of people participating in the event, 2) ensure the protection of public order, 3) provide medical services, 4) ensure the proper technical condition of building structures and their technical installations and equipment, in particular, fire protection systems and sanitary systems. In addition, the organiser of the mass event is liable for damage to the property of the Police, Military Gendarmerie[40], the municipal (urban) law enforcement services, the State Fire Service and other units

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[38] Najgebauer A, Antkiewicz R, Rulka J, Tarapata Z, Kapałka M, Zagrożenia dla porządku i bezpieczeństwa publicznego, [in:] Najgebauer A (Ed.), Modele zagrożeń aglomeracji miejskiej wraz z systemem zarządzania kryzysowego na przykładzie miasta stołecznego Warszawy. Warsaw: WAT, 2009, p. 561.

[39] *Ibid*, p. 564.

[40] The Act of 20 March 2009 on Mass Event Security, *Journal of Laws* 2009, No. 62, item 504, as amended.

taking part in the action, equal to the value of the property destroyed or damaged. The nature of mass events causes specific problems not only in the location where they are organised, or its immediate surroundings, but also in other public places where numerous groups of participants[41] may appear, e.g. in road traffic, public transport, on the streets, in shopping malls, hotels, fan zones.[42]

Table 1 summarises the most important information on the population of individual agglomerations, crimes[43] and the crime detection rate for the services responsible for maintaining public security.

Table No. 1. Population density and crime in selected agglomerations.

Agglomeration (City)	Surface in sq. km	Population in thousands	Population density per sq. km	Crimes ascertained by the Police and the Prosecutor's Office in completed preparatory proceedings					Total crime detection rate in %
				Total	Criminal offences	Economic offences	Road traffic offences	Other	
Capital City of Warsaw	517	1754	3392	48 580	36 898	8186	2137	1359	43,1
Poznań	262	540	2061	16 614	13 897	1704	545	468	47,9
Wrocław	293	637	2174	22 993	19 397	2307	865	424	42,7
Cracow	327	765	2339	23 704	17 105	4810	1053	736	58
Metropolitan Association of Upper Silesia[44]	1218	1871	1536	51 627	34 428	11 977	3029	2193	68,07
Tricity	414	746	1801	19 427	13 376	4554	962	535	57,23

Source: Author's own analysis based on data from the Local Data Bank.44

On the basis of the table above, it can be concluded that the total number of offences is proportional to the number of inhabitants of a given agglomeration.

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[41] Zagrożenia oraz kierunki działania podczas realizacji przez jednostki organizacyjne Policji zadań z zakresu bezpieczeństwa imprez masowych z dnia 19 lutego 2010 r., materials made available by the Municipal Police Headquarters in Zamość.

[42] Urban A, Podnoszenie kompetencji w zakresie zapewnienia bezpieczeństwa imprez masowych — Euro 2012. Szczytno: Wyższa Szkoła Policji, 2009, p. 114.

[43] The data refer to 2016.

[44] A metropolitan association called the Upper Silesia and Zagłębie Metropolis has been operating in the Silesian Voivodeship since 1 January 2018. It consists of the following cities with poviat rights: Bytom, Chorzów, Dąbrowa Górnicza, Gliwice, Katowice, Mysłowice, Piekary Śląskie, Ruda Śląska, Siemianowice Śląskie, Sosnowiec, Świętochłowice, Tychy and Zabrze, the communes with city status: Będzin, Bieruń, Czeladź, Imielin, Knurów, Lędziny, Łaziska Górne, Mikołów, Pyskowice, Radzionków, Sławków, Tarnowskie Góry and Wojkowice and the following communes: Bobrowniki, Bojszowy, Chełm Śląski, Gierałtowice, Kobiór, Mierzęcice, Ożarowice, Pilchowice, Psary, Rudziniec, Siewierz, Sośnicowice, Świerklaniec, Wyry and Zbrosławice. This association was established under the Act of 9 March 2017 on the Metropolitan Association in the Silesian Voivodeship, and set up by the Resolution of the Council of Ministers of 26 June 2017 on the Establishment of the Metropolitan Association in the Silesian Voivodeship under the name "Upper Silesia and Zagłębie Metropolis".

However, the comparison of the total number of offences in relation to population density is more reliable and therefore should be considered in this respect. This comparison is shown in the figure below.

Chart No. 1. Total crime detection rate in the largest Polish agglomerations as a function of population density.

Population density in large urban centres
[number of inhabitants/sq. km]
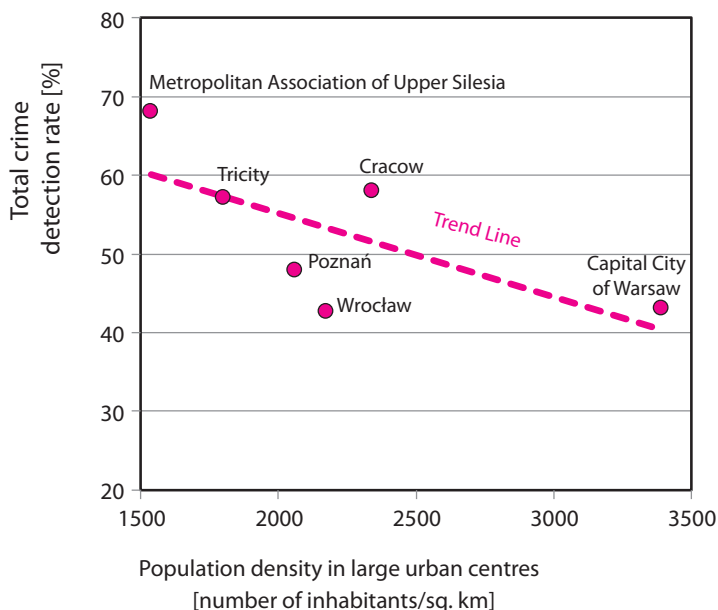
Source: Author's own analysis.

The figures in the chart show that with an increase in population density the crime detection rate is decreasing. The second conclusion drawn based on the figure is that those agglomerations for which the detection rate is above the trend line perform better and exceed the average crime detection rate for comparable agglomerations. In turn these for which the detection rate lies below the line, are doing the worst. Based on the chart, it can be concluded that the Metropolitan Association of Upper Silesia and Cracow are the models to follow. While Poznan and Wrocław are much worse in comparison. This means that the crime detection rate in the latter two cities is the lowest compared to the other Polish cities of similar size.

On the basis of the above chart, it can be directly proven that as the population density of the agglomeration increases the respective forces and resources should be also increased to counteract the decrease in the crime detection rate.

Conclusions

After conducting an in-depth analysis and evaluation of the solutions for the functioning of various types of agglomerations in Poland, a number of reflections come to mind that should be taken into account in the concept of model solution for the security management systems in large urban agglomerations.

The current administrative shape of large cities and agglomerations concentrated around them was influenced mainly by legislative changes aimed at rebuilding self-government, which were introduced in Poland after 1989, i.e. after regaining full independence and sovereignty. Large Polish cities are mostly located at the largest rivers, and around them there is a zone with a significant population density, which consists of urban and rural communes very well connected with the centre of the agglomeration. These are usually cities which are the capitals of the voivodeships. The economic and social ties between the city and the suburban zone mean that the problems in the area of security overlap and become similar. Therefore, the services responsible for public security and the issues related to the protection of the public face similar difficulties, while the inhabitants of the suburban zone can count on specialist assistance from well-equipped units of the voivodeship capital.

Assuming that the *agglomeration is a functionally coherent metropolitan system of many settlement units strongly linked by the movement of people, goods, money and information, that it includes a nodal centre and units with lower level of centrality called suburban zone*[45] and the population criterion adopted in the European Union[46], and taking into account other characteristics of this type of metropolis — it should be stated that there are two types of agglomerations in Poland: monocentric and polycentric. Monocentric agglomerations operate on the basis of one large city, such as: Warsaw, Poznań, Wrocław, Cracow. In turn, polycentric agglomerations are composed of several or a dozen or so cities, e.g. Upper Silesia region and Tricity (Gdańsk, Gdynia, Sopot). It should be remembered that the agglomeration is a functional phenomenon, and it is difficult to confine it within rigid boundaries of basic territorial division units, and thus individual agglomerations are constantly developing qualitatively and spatially.

When considering the threats specific to metropolitan areas, it is worth noting that the dangerous events intermingle and that secondary threats might occur with effects difficult to predict. An example is not only "blackout", but also terrorism or other criminal activity. The concentration of large number of people in a relatively small area, e.g. during mass events, creates particular challenges to the services and the need to consolidate efforts in this area. Therefore, it seems advisable to take into account the synergy effect in combining the efforts and measures from across the agglomeration in future organisational solutions, to an even greater extent than before.

The possibility of introducing a relatively uniform model of agglomeration security management is supported by the fact that the agglomerations in Poland

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[45] Parysek J.J, Aglomeracje miejskie w Polsce…, *op. cit.*, p. 30.
[46] Let us remember that a metropolis is defined as an urban agglomeration (conurbation) with a population of not less than 0.5 million inhabitants and characterised by high level of commuting to work — Zuzańska-Żyśko E, *op. cit.*, p. 42.

operate under similar conditions, although this should take into account the spatial and organisational differences between the monocentric and polycentric agglomerations. For the latter, it will be important to consider the role of the leading city. For future scientific consideration of the issue of security system in the agglomeration, it is important to note that the voivodship capital with the government administration (governor) and self-government administration (city mayor) can be distinguished in each large urban settlement system of such kind. Moreover, each of these cities has poviat rights in terms of administrative hierarchy. This is an important guideline for attempting to develop the aforementioned model solution, which could form part of this complex administrative structure and, most importantly, could benefit from the synergy effect resulting from the significant potential of the services and institutions responsible for the security in the agglomeration.

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Streszczenie. Jednym z procesów charakteryzujących zmiany we współczesnym świecie jest intensywna urbanizacja przestrzeni publicznej. Ogólnie rzecz biorąc, objawia się ona we wzroście wskaźnika liczby ludności miejskiej na danym obszarze. Z punktu widzenia bezpieczeństwa dużych ośrodków miejskich, najważniejszą kwestią jest rosnące zagęszczenie ludności na danym obszarze, ale nie tylko. Równie ważne jest zapewnienie bezpieczeństwa w kontekście rozwoju przestrzennego danego obszaru, tj. w stale poszerzającej się strefie, która tworzy aglomerację. Postrzegana w ten sposób urbanizacja kojarzona jest z wielkimi wyzwaniami stojącymi przed instytucjami odpowiedzialnymi za bezpieczeństwo zarówno pod względem ilościowym jak i jakościowym. Modyfikacje systemów bezpieczeństwa dla dużych obszarów miejskich tworzących aglomeracje powinny uwzględniać wszystkie z następujących czynników: czynnik demograficzny, czynniki gospodarcze i społeczno-kulturowe oraz zmiany stylu życia mieszkańców tychże aglomeracji. Szukając kierunków zmian instytucjonalnych i funkcjonalnych dla systemów bezpieczeństwa, istotnym zdaje

się być scharakteryzowanie współczesnych aglomeracji, określenie wspólnych cech i zdefiniowanie najpoważniejszych zagrożeń. Cechy wspólne to przede wszystkim duże zagęszczenie ludności i koncentracja infrastruktury, w tym systemów infrastruktury krytycznej. Wynikające z tego zagrożenia to głównie zagrożenia dla bezpieczeństwa i porządku publicznego, jak również zagrożenia terrorystyczne, a w obszarze technicznego funkcjonowania aglomeracji — rozległa awaria prądu, tak zwana przerwa w dostawie energii elektrycznej, skutkująca lawiną drugorzędnych zagrożeń. Zagrożenia, o których mowa, wynikają z miejskiego charakteru regionu ich występowania.

Резюме. _Одним из процессов, определяющих изменения в современном мире, является интенсивная урбанизация общественного пространства. В основном это проявляется в увеличении показателя численности городского населения в данном районе. С точки зрения безопасности крупных городских агломераций наиболее важным вопросом является увеличивающаяся плотность населения данной территории. Не менее важным вопросом является обеспечение безопасности в контексте пространственного развития данной территории, то есть в постоянно расширяющейся зоне, которая создает агломерацию. Понимаемая таким образом урбанизация связана с большими вызовами, с которыми сталкиваются органы обеспечивающие безопасность, как в количественном, так и в качественном отношениях. В поисках институциональных и функциональных изменений в системах безопасности важными являются: характеристика современных агломераций, определение общих черт и наиболее серьезных угроз. Общими чертами являются, прежде всего, высокая плотность населения и концентрация инфраструктуры, включая системы критической инфраструктуры. Вытекающие из этого угрозы, главным образом в сфере общественной безопасности и общественного порядка, а также террористические угрозы, а в сфере технического функционирования агломерации — крупная авария в области электроэнергии, так называемый разрыв в поставках электроэнергии, приводят к множеству вторичных угроз. Угрозы, о которых идет речь, вытекают из городского характера региона их проявления._

(mug)