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Civil defence and civil protection in Poland

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Abstract: An analysis of the current state of civil defence and civil protection in Poland is presented within the scope of this paper. Legal acts setting forth the scope of civil defence and civil protection as well as technical and construction regulations for bunkers were also included in the analysis. The issue of constructing bunkers and shelters in Poland has been diagnosed. Bunker related activities have been expanding over the years. However mainly private investors are showing interest rather than state institutions as one would expect. Construction of protective facilities will certainly contribute to an increase in the number of places where civilian population can take shelter in the event of war or a natural disaster that cannot be foreseen.

Keywords: civil defence, civil protection, bunkers.

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1. Introduction

Protecting civilians against the dangers posed by natural forces and human activity, including warfare, has not yet been coherently regulated in Poland. Poland is one of the countries where the number of bunkers per capita is low. As of 2013, there are 28,687 bunkers and shelters in the country, with a total capacity of 1,135,239 places. Existing structures therefore provide 2.86% of the required nationwide civil protection facilities [5].

According to the Supreme Audit Office (NIK), there is no effective civil protection system in Poland. Authorities responsible for implementing crisis management and civil defence tasks have not put in place plans nor effective procedures adequate to the existing threats and have not provided the necessary resources to enable proper management of, inter alia, emergency situations. Failure to prepare adequate procedures and to ensure conditions for good coordination of activities can significantly reduce the effectiveness of civil protection services, in particular in the event of an emergency. NIK found irregularities within the scope of crisis management at all units covered by the audit. This is indicative of the general problems of the entire civil defence system. It is unprepared for effective implementation of civil defence tasks stemming from legal acts [6].

The aim of this paper is to present the legal acts pertaining to civil defence and civil protection and to analyse the current state of bunkers and the prospects for the development of protective infrastructure in Poland.

2. Review of legal acts setting forth the scope of civil defence and civil protection

The Act on General Defence Obligation of the Republic of Poland has not been in force since 23 April 2022. This resulted in the removal from the legal framework of all functions associated with National Civil Defence leadership. Therefore, currently there is no official Head of Poland's CD, as there are no legal acts regulating this position. Such action resulted in the fact that the only document regulating certain civil defence and civil protection activities is Protocol I to the Geneva Conventions of 12 August 1949 on the Protection of Victims of International Armed Conflicts. Despite the fact that Poland was its co-author and co-initiator the Protocol was only ratified by Poland on 19 September 1991 [1].

Within the scope of the Protocol, civil defence is understood as the fulfilment of all or some humanitarian tasks aimed at protecting the civilian population from the dangers arising from military action or natural disasters and overcoming their immediate consequences, as well as providing conditions necessary for survival. The following tasks have been specified: warning services, evacuation, preparation and organisation of bunkers, operation of blackout measures, rescue, medical services, including first aid and religious care, firefighting, detection and marking of danger zones, decontamination and other similar protective measures, provision of ad hoc accommodation and supplies, ad hoc assistance to restore and maintain order in disaster zones, ad hoc restoration of essential public services, ad hoc burial of the dead, assistance in salvaging goods essential for survival, and additional activities necessary to fulfil any of the above tasks, including planning and organisational work [1].

Fig. 1. Poland's national civil defence logo [1].

3. Analysis of technical and construction regulations pertaining to bunkers in Poland

Pursuant to the legislation currently in place, there is no one with responsibility for maintaining bunkers and shelters. Lack of clear regulations has a significant impact on the process of creating and maintaining new facilities of this type. Lack of legislation means that designers cannot be expected to apply specific and predetermined solutions in construction projects.

Protective structures comprise bunkers and shelters. These concepts are often confused, so it is worth quoting their definitions. A bunker (*pl: schron)* is a protective structure with a structurally enclosed, airtight enclosure that provides protection for persons, equipment, material stockpiles or other material assets against assumed threats acting from all sides. Whereas a shelter *(pl: ukrycie)* is a non-hermetic protective structure, equipped with the simplest systems, providing protection of persons, equipment, material stockpiles or other material goods from assumed threats acting from specific directions [10].

On 4 December 2018, new guidelines from the Head of National Civil Defence on the principles of dealing with protective building resources came into force. The objective of the document was to delegate defence activities to local units responsible for spatial planning. Categories of bunkers and shelters according to their strength were introduced in technical standards, in the form of annexes to the guidelines. The technical conditions to be met by protective structures are also defined therein. These include

general technical and functional requirements for protective structures, specific strength requirements, ventilation requirements, water and electricity supply, heating or sewage disposal. Requirements for basements and garages with a protective function have also been set forth. Recommendations for protective solutions in single-family housing have been added. The technical requirements set forth in the guidelines apply to constructing new protective structures, but are also applicable to reconstruction or renovation works [2].

4. Current state of bunkers in Poland, contemporary trends in technical and functional solutions for protective bunkers

Bunker design was already being developed in Poland in the pre-war era, when a new threat to people appeared in Europe – aerial bombs. The bunkers built in Poland at the time were at the same technological level as those in neighbouring countries. After the end of the Second World War, Polish shelter designers had access to German and Soviet design documentation. Documentation from nuclear tests was obtained at the time. Until the early 1990s, domestic plants produced all the necessary bunker equipment. However, there were too few such plants and they were lacking capacity. Throughout the Polish People's Republic period, there were not enough protective structures in relation to needs. However, no more were added as such measures were only envisaged for situations of increased defence alert levels. [8].

At present, most of the existing structures, erected decades ago, are maintained in various states of repair, often constituting a danger to life and health. Consequently, the progressive closure of some of them will be inevitable. Also, some protective structures are located in areas earmarked for construction projects and new developments are prioritised. Therefore, new protection facilities have to be constructed. As one of the arguments in favour of such development is the achievement of a basic strength that does not significantly increase costs, and for reinforced concrete structures (such as underground car parks), this requirement is met by some structures without any additional technical measures to increase the strength of the structural elements. Basic strength means that in the event of a collapse of a building’s superstructure, the protective structure will withstand loads in the form of debris and falling structural elements [8].

Contemporary proposals for protective facility solutions are outlined hereinbelow.

4.1. Home bunkers

Interesting bunker solutions are available from private entrepreneurs. Flize Gres is a good example. The company builds fully equipped home bunkers which feature the necessary electronic, plumbing and telecommunications systems, heating and fire protection systems and even emergency power, allowing people to survive in the bunker in comfort without contact with the outside world for up to 90 days [7].

Designers work with architects from early project stages to ensure that bunker rooms are tailored to the client's taste. Due to their lower energy consumption LED lamps are used as lighting. The bunker entrance door boasts highest watertightness class, EI 120 fire resistance and 100 Pa overpressure resistance. External walls are made of at least 40 cm thick reinforced concrete. The foundation slab is at least 25 cm thick. The thickness of the floor-ceiling assembly is designed after taking into account the protective concept of the bunker, i.e., who will be using the bunker (family bunker or a larger bunker) and what its purpose will be (only to protect people or whether there will be a need for new functions and thus more equipment). These design values have to comply with standards set forth in technical conditions [7].

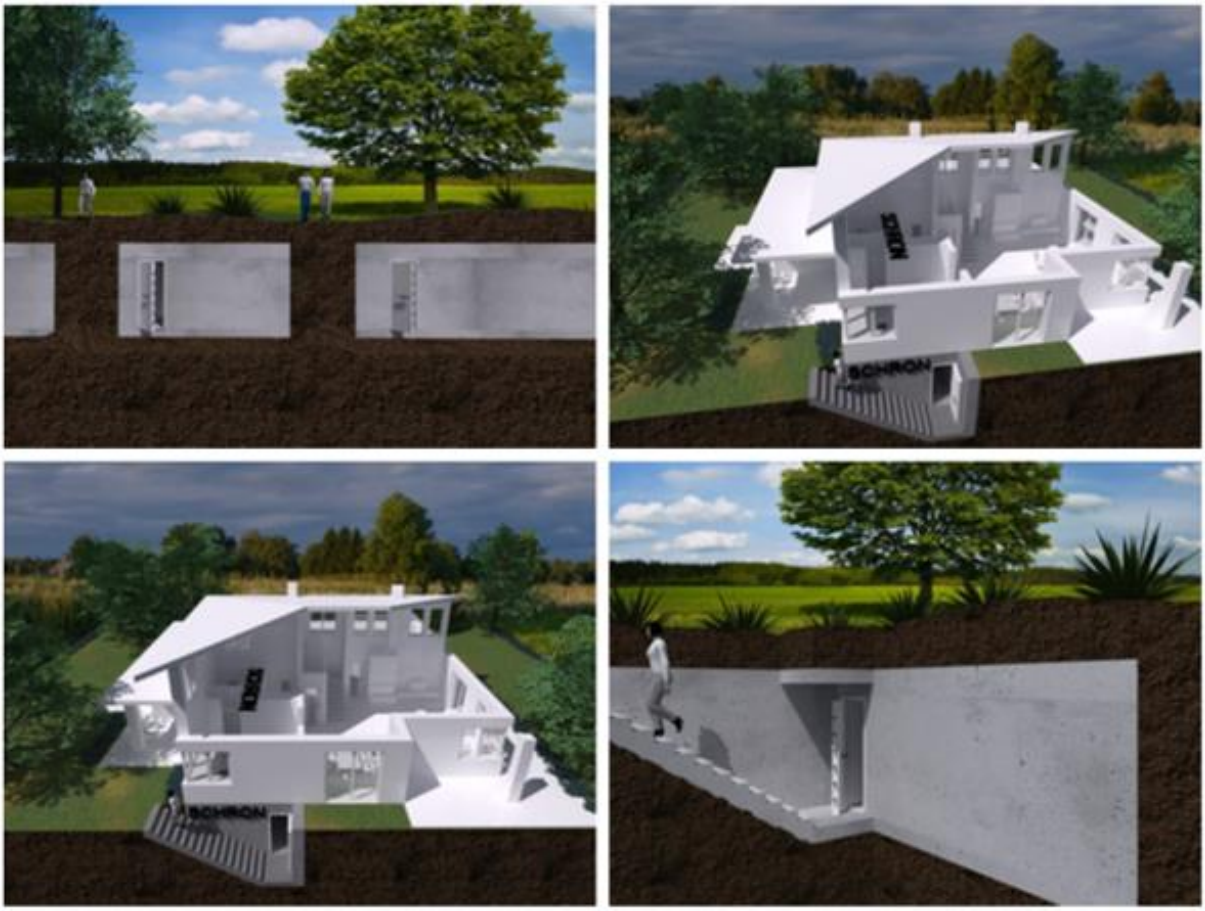

Fig. 2. Visualisation of a Flize Gres home bunker [7].

Fig. 3. Flize Gres bunker functional solutions suggestion [7].

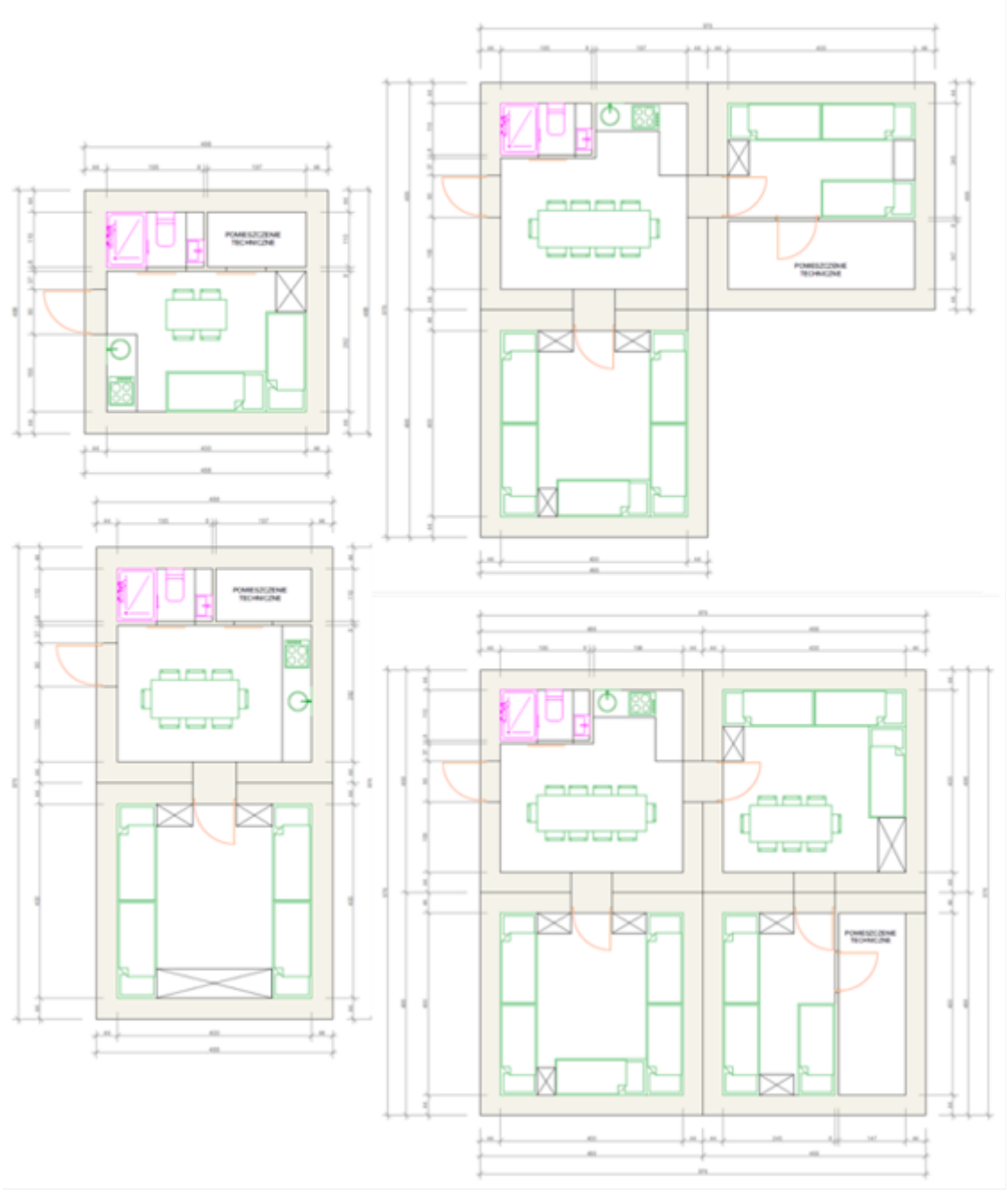

Fig. 4. Flize Gres bunker functional solution suggestions [7].

4.2. Modular bunkers

Mathon, a Bydgoszcz-based construction company, has designed dual-use modular bunkers, which can be as big or as small as required. While the product is not ready for commercial sales, a prototype of a basic bunker is currently undergoing certification testing [9].

A basic bunker is intended to meet the conditions for protecting a family of four under average conditions for three days. It also comes with an option to expand it. All necessary systems, i.e., plumbing, ventilation and heating, have been taken into account. Modular bunker designs offer an opportunity to shape the space, functions and various amenities that will enhance the future owner's comfort without boundaries. The bunker contains a sleeping area, a toilet with shower, a kitchenette and a technical area. An extended version of the bunker provides options for the installation of additional systems and

features that allow complete, airtight insulation from external conditions. It therefore provides protection against radioactive, biological or chemical hazards and contamination. The owner may remotely monitor and manage the bunker [9].

A modular bunker is a dual-use product, meaning that it meets the operational and technical requirements for defence activities [9].

Fig. 5. Visualisation of a Mathon modular bunker [9].

Fig. 6. Visualisation of a Mathon modular bunker [9].

4.3. Mobile military bunkers

According to definition provided by PWN encyclopaedia, a military bunker *(pl: bunkier)* is a colloquial name for any combat shelter that is both a position and a component of a dispersed fortification system [3]. Thus, one should note right at the outset that the author of "mobile military bunkers" has opted for inconsistency in naming this product.

Cichewicz Home & Garden mobile military bunkers are designed on the basis of shipping containers, with 25 m^2 of floorspace. They will therefore be sufficient to shelter between 2 and 8 people. A minimum plot of 4 m x 15 m (60 m^2) is required for the foundation of such a facility [4].

The rapid assembly of container military bunkers and their resistance to gunfire, shrapnel, fire or adverse weather conditions also allows them to be used as ready-made mobile homes to create encampments or makeshift settlements for humanitarian aid, military operations or during natural disasters [4].

Mobile military bunkers feature a chemical toilet and a reservoir for domestic and drinking water. They come with pre-installed electrical, water and fire protection systems. Access to external utilities is not required. Camouflaged ventilation inlets have also been fitted, and the arrangement of these in two independent locations improves safety inside the bunker. Optionally access to electronic communication may be installed inside these bunkers [4].

Fig. 7. Visualisation of a Cichewicz Home & Garden mobile military bunker [4].

4.4. Bunker shelters

RUBOX supplies bunker shelters. Although if we look at the above cited definitions, there are inconsistencies in using "bunker shelter" as a product name. Nonetheless these are available on market and are quite popular.

Bunker shelters provide refuge from conventional weapons, such as artillery shelling, firearms or small explosives. As conventional weapons continue to be used and developed, existing NATO doctrine recommends certain technical solutions for the establishing broader protective structure building programmes. RUBOX designs special protective units in existing buildings and as free-standing structures. The high strength of these units created on a specially designed structural basis provides protection against typical and terrorist threats.

As structurally uncomplicated units, bunker shelters can provide self-contained mobile safety for civilians and the military. Also, the ability to apply realistic transfer print to the structural parts allows the unit to be effectively hidden [11].

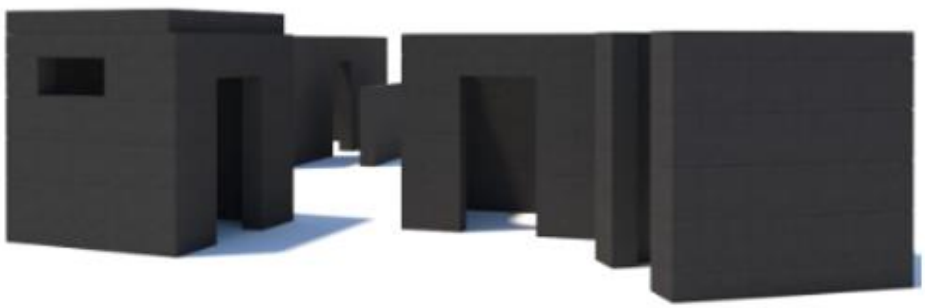

Fig. 8. RUBOX bunker shelter [11].

5. Conclusions

Legal acts setting forth the scope of civil defence and civil protection are presented in this paper. The obligations of those responsible for civil defence, i.e., the tasks of the Head of National Civil Defence and the tasks of the local civil defence authorities, are also presented. Technical and construction regulations relating to bunkers in Poland are cited. On the basis of these, one may conclude that it is necessary to develop new legislation that will clearly regulate the construction of bunkers in Poland.

We are currently seeing increased interest in commercial bunkers. Thus far these are small projects of single units still in their research phases. However, it may be assumed that this sector will grow significantly in the near future.

It will also be important to regulate issues associated with financing, maintenance and operation of bunkers and shelters, as at the moment there is a lot of interest in private bunkers. However, these are only suitable for private use and it is necessary to build protective facilities for public use.

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