

Approaches to the Population Sheltering in Selected European Countries in the Context of a Changing Security Environment

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Abstract

The aim of this article is to analyse the approaches to population sheltering in Switzerland, Finland, and Sweden. The research methodology is based on a previously published article by the authors [1], in which the relative criteria of approaches to population sheltering in selected countries were identified and evaluated using Saaty method and the weighted sum method. This procedure is now also applied to the newly assessed countries. The analysis of sheltering in Switzerland, Finland, and Sweden highlighted common features resulting from the inclusion of sheltering within the system of total national defence, as well as differences in the systemic integration of sheltering among the countries under review. The findings suggest that an effective sheltering system is contingent upon sustained political support, a clear legislative framework, and the integration of protective infrastructure into the broader framework of national security.

KEY WORDS: *population sheltering; threats; security environment; comparison; multi-criteria analysis*

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1. Introduction

The security environment in Europe has undergone a dynamic transformation in recent years, characterized by the return of conventional military threats, increasing geopolitical rivalry, and the persistent presence of non-military threats. The armed conflict in Ukraine, heightened tensions among major powers, and the deteriorating security situation in Europe have once again brought the issue of protecting the civilian population – including civilian sheltering – into focus. Although the end of the Cold War led many European states to scale down the systematic construction and maintenance of protective structures [2], some countries have retained a robust and continuously developed sheltering system. They are primarily the Nordic countries and Switzerland.

This article therefore focuses on a comparative analysis of approaches to population sheltering in Switzerland, Finland, and Sweden, i.e., in countries that, in the European context, are often [2], [3], [4], [5] regarded as examples of a systematic and conceptual approach to the protection of the civilian population.

The research is based on a qualitative analysis of national legislative frameworks, strategic documents, concepts in the field of civil protection, and publicly available expert sources focused on protective infrastructure and the organisation of sheltering. Approaches to sheltering in the selected countries are evaluated on the basis of criteria focusing on the following areas: the legislative and normative embedding of the sheltering system, the capacity of protective structures in relation to the population, the technical condition of shelters with regard to their actual usability, the range of threats for which sheltering is planned, information support provided to the population, and approaches to sheltering that reflect changes in the security situation.

The results are compared, in relevant aspects, with the situation in the Czech Republic and, where appropriate, with other countries previously assessed [1].

2. Selected Aspects of the Sheltering in Switzerland

The issue of sheltering in Switzerland gained significance as early as the initial period of the Cold War as a result of the threat of nuclear war, particularly in connection with a large-scale national defence exercise in 1963, which revealed absent or insufficient existing measures for the protection of the civilian population [6] From the mid-1960s onwards, a system of total national defence therefore began to be developed at the federal government level, with a particular focus on the issue of sheltering [7] In addition to the development of the sheltering system, national defence organisations [8] were also established, focusing, among other things, on the warning system (or alarm system) and a coordinated medical service based on a comprehensive system of underground hospitals and first-aid stations in the event of nuclear war [9] The key legal regulations were the Federal Law on Civil Defence (Bundesgesetz über den Zivilschutz) of 1962 and the Federal Law on Civil Defence Constructions (Bundesgesetz über den baulichen Zivilschutz) of 1963, which established the organisational aspects of compulsory civil defence service and the mandatory construction of shelters in municipalities with more than 1,000 inhabitants [10] From the 1970s, according to the Concept of Civil Protection [11], until the early 1990s, civil protection, in view of the threat of nuclear war, focused on preparedness and prevention, and the obligation to organise sheltering applied to all municipalities. This resulted in the extensive construction of protective premises. In 2009, approximately 270,000 shelters were registered in Switzerland, which, given their capacity and the population at that time, 7.6 million, provided protection for more than 93% of the population [10] The capacity of the current shelter stock exceeds the population of Switzerland, although cantonal and local differences exist [12] In Switzerland, the civil protection system continues to be organised on the basis of the militia principle [13].

Civil protection, with the sheltering system at its core, has a strong legal basis, falls under the joint competence of the state and the cantons, and is organised at the municipal level. The basic legal document for the field of sheltering is the Federal Law on the Protection of the Population and Civil Protection (Bundesgesetz über den Bevölkerungsschutz und den Zivilschutz) [14]. The law stipulates that every resident of Switzerland has the right to shelter in the vicinity of their place of residence. To this end, the cantons are tasked with supervising the construction of shelters and are also given responsibility for ensuring a sufficient and appropriately distributed number of shelter places for persons. In areas where there is an insufficient number of shelter places, municipalities are obliged to provide sheltering in public shelters [14]. This stipulated obligation can already be traced back to a document from the 1960s [8].

In areas with an insufficient number of shelter places, owners of residential buildings are also obliged to include shelter spaces in new construction and subsequently equip them. If this obligation does not apply to them, they must pay a compensatory contribution. These compensatory contributions are then paid to the respective cantons and are used to finance public shelters in municipalities and the renovation of public shelters (and also private shelters). Remaining funds may be used, for example, for the conversion of shelters for civil protection purposes, regular shelter inspections, or training activities in the field of civil protection [14].

Owners of properties intended to serve as nursing homes or hospitals are also obliged to include shelters in the construction and subsequently equip them. If this is not technically possible, these owners are likewise required to pay a compensatory contribution. A building permit is granted only after a decision has been made on the inclusion of shelter spaces in the construction. Responsibility for the maintenance of shelters lies with their owners [14].

The framework for managing the construction of shelters, the conditions for their decommissioning, the amount of compensation payments, and the use of remaining financial resources are determined by the Federal Council (Bundesrat). The decommissioning of shelters itself then falls within the competence of the individual cantons [14].

Protective premises in general are primarily intended for use in the event of armed conflict, but they may also be used for emergency sheltering in the event of natural or man-made disasters. Above all, they must provide protection against CBRN agents and meet requirements for resistance to conventional weapons [12], [15] From the perspective of civil protection [14], protective premises are divided into shelters (Schutzräumen) and protective structures (Schutzanlagen). Shelters are underground structures located in the basements of buildings and serve to protect the population and cultural property. The Federal Office for Civil Protection (Bundesamt für Bevölkerungsschutz - BABS) states that the shelter stock comprises approximately 370,000 private and public shelters, available for approximately 9 million persons. The most common type of shelter is a private shelter in the basement of single-family and multi-family houses. Owing to their massive envelope, these shelters should withstand an overpressure of at least 1 bar and should therefore also be resistant to the collapse of the building above them. Their possible use is therefore also being considered in the case of an imminent risk of avalanches or during earthquakes [16] Larger private or public shelters have a capacity of 200 to 800 shelter places. These shelters are designed to allow long-term occupancy [12]. Protective structures primarily serve to maintain the operational readiness of civil protection or defence resources. They have a dual-use function, i.e., their private use is also permitted in peacetime. However, these structures must be maintained in a state of normal operational readiness [15] According to the law [14], protective structures include:

- command posts (Kommandoposten) – serve municipal, regional, and cantonal command authorities for command and control purposes and to support them in ensuring the operational capability and readiness of civil protection resources,
- facilities for rescue units (Bereitstellungsanlagen) – serve as logistics bases for civil protection and provide accommodation for the personnel and equipment of operational units, or serve as training facilities, serve as logistics bases for civil protection and provide accommodation for the personnel and equipment of operational units, or serve as training facilities,

- protected first aid posts (geschützte Sanitätsstellen),
- protected hospitals (geschützte Spitäler) – are tasked with providing inpatient care and treatment for patients [14], [15], [17], [18].

The type, number, and design of protective structures are determined by the needs of the individual cantons for their deployment in emergencies and disasters. Needs planning in relation to these structures is updated by the cantons at least every ten years. The technical specifications for this needs planning are defined by the Federal Office for Civil Protection [18]. According to available information [12], more than 1,700 protective structures are available. The Federal Office for Civil Protection then approves these protective structures and regulates the technical aspects of their maintenance and renewal. Hospital operators are responsible for the construction, equipment, maintenance, and renewal of protected hospitals. The individual cantons are responsible for the construction, equipment, maintenance, and renewal of the remaining types of protective structures [14].

As regards the technical condition of shelters, the Concept of Protective Premises [19] acknowledges that a significant proportion of shelters are 30–40 years old and that some components, particularly ventilation units and gas filters, will need to be replaced in the coming years. However, the readiness and maintenance of shelters are, according to the Concept [19], inspected at least every ten years in accordance with the requirements of the Federal Office for Civil Protection; it can therefore be assumed that the condition of the shelters corresponds to their intended purpose.

Switzerland's initiative in relation to the protection of civilians against contemporary threats is significant. In response to the Fukushima nuclear power plant accident in 2011, Switzerland strengthened the level of nuclear and radiological protection [20]. In view of the changing global security situation in recent years, particularly in connection with the war in Ukraine, it has also intensified the renovation of protective premises. At the same time, the Swiss government amended the Civil Protection Ordinance (Zivilschutzverordnung) [18], which, in relation to shelters, for example, stipulates the obligation to provide two shelter places for every three rooms in new residential buildings with 38 or more rooms. For new buildings intended to serve as hospitals, nursing homes, or care homes, there is an obligation to provide a number of shelter places corresponding to the number of beds intended for patients. This obligation also applies in the case of extensions, conversions, or changes in the use of existing buildings that result in a larger residential area or an increase in the number of beds for patients. Cantons may also order the construction of shelters in municipalities or areas where there is a shortage of shelter places; this should compensate for the decommissioning of old and no longer functional private shelters and balance the deficit in the shelter stock in certain areas [19]. The equipment of shelters with materials necessary for the stay of sheltered persons must be ensured by their owners. To enable rapid operational readiness of a shelter, the materials must be stored in the building, or on the plot of land, in which the shelter is located. For protective structures, the requirements are determined on the basis of their specific type [18]. The Ordinance [18] also stipulates, for example, that every cantonal and regional command authority must have a command post. Facilities for rescue units must ensure the safe accommodation of personnel and storage of equipment; in the event of armed conflict, an additional reserve of target capacities of up to 30% must also be planned. In the case of facilities for the provision of medical care, i.e., protected first-aid posts and protected hospitals, cantons must ensure beds for patients, the number of which must correspond to at least 0.6% of the permanent resident population. If the number of beds falls below this percentage, the capacity must be restored within ten years.

The development of the sheltering system is based on the aforementioned Concept of Protective Premises [19], which constitutes the basic planning document for a politically and economically sustainable, risk-based approach to sheltering. According to the Concept, the cantons intend to gradually replace old protective infrastructure, for which the Concept indicates an average service life of 40 years, with low shelter capacity by means of public shelters, converted existing protective structures, or new private shelters. Shelters located in zones with a high level of hazard, such as floods, avalanches, or landslides, are also being decommissioned. One current trend is also the more frequent use of large-capacity public shelters, or protective structures converted into public shelters, as places of emergency sheltering or accommodation in the event of non-military incidents and disasters. The use of protective premises against a broad spectrum of threats thus reinforces a key pillar of Switzerland's resilience and preparedness [19].

Information support in the field of sheltering in Switzerland differs from that in a number of European countries, such as Poland or the Czech Republic. Given that sheltering is provided for most of the population in the vicinity of their place of residence or current location, information on the location of individual shelters is not always publicly mapped. According to available information [16], [21], the current sheltering system is moreover address-based, or assigned, and non-public. In an emergency, the government should order the "preliminary allocation" of shelter places, and local authorities should make shelters operational within five days. Details will be communicated to the public only on the basis of government orders. Information on the measures adopted and on protection through sheltering should be specified through the alarm and siren system, directly on site, for example with the support of civil protection, or through websites or the Alertswiss application on mobile phones. The Alertswiss application [22] is a free official service of the Federal Office for Civil Protection that provides, in real time, through the application or web portal, alerts or warning information on emergencies in Switzerland, the situation in the region, with the mobile application allowing personalised notifications according to cantons and current location, and instructions on how to behave in the event of danger. Information in the field of sheltering and threat preparedness is also published on the portal of the Swiss public radio and television company, SWI swissinfo.ch. Citizens may also obtain some information on places used for sheltering from municipalities, from landlords when moving into a building, or from building documentation, provided they have access to it. The Federal Office for Civil Protection further publishes documents on protective structures [23], [24], containing technical

specifications for designers, forms for owners, operating instructions for technical equipment, and other specific information related to the construction, conversion, or maintenance of protective premises. These documents also include the aforementioned Concept of Protective Premises [19].

3. Selected Aspects of the Sheltering in Finland

The manner in which Finland approaches population sheltering represents a long-standing specific and, to a considerable extent, exceptional approach in the European context. The issue of population sheltering has developed as a stable and legally embedded component of the broader system of civil defence and comprehensive security of the state [25], [26], [27]. After the end of the Cold War, Finland maintained continuity in the construction, maintenance, and modernisation of the shelter stock as part of the broader civil defence system. The Finnish approach is based on the principle that the protection of the civilian population should be prepared in peacetime so that, if necessary, it can be put into operation without delay, and at the same time that this protection should be based as far as possible on ordinary administration, building development, and the standard institutional arrangements of society [25], [28]. The history of this approach dates back to the late 1930s. In connection with the deteriorating security situation in Europe, the first protective structures for the civilian population began to be constructed in Finland in 1939 [28].

The Second World War and Finland's direct experience of aerial threats created the conditions for civil protection to be gradually institutionalised after the war as a permanent component of the state's internal security. Of fundamental importance in this regard was the Civil Defence Act (*Väestönsuojelulaki*) [25] of 1958, under which the Ministry of the Interior assumed responsibility for civil defence, evacuation, damage mitigation, and the provision of shelters in risk areas. The 1958 Act [25] also stipulated that, in peacetime, such measures should be adopted as to enable the civil protection system to be activated without delay, and it explicitly envisaged the construction of protective structures, the procurement of special equipment, the provision of training, and the planning of evacuation and other protective measures. Older expert sources also state that this legislation formed the basis for the obligation to include shelters in construction projects, with the earlier threshold for the emergence of this obligation being associated with a minimum built-up area of 600 m² [2], [5].

From the late 1950s onwards, a system began to emerge in Finland that was based on the concentration of protective infrastructure in areas where the largest numbers of people were located and where large residential, administrative, healthcare, educational, and industrial buildings were being constructed. Shelters were built primarily in urban agglomerations, especially in the southern part of Finland. Enhanced protective measures were focused mainly on residential, industrial, and transport centres. Sparsely populated areas and areas consisting of detached single-family houses remained outside the focus of the development of the civil protection system. This principle of risk-oriented shelter distribution, conditioned by local population numbers, remains evident in the Finnish concept of civil protection to this day and is one of its fundamental principles [26], [28].

A significant technical and conceptual milestone was the further development that took place in the 1970s, when Finland's shelter stock was gradually technically standardised. The document *The Security Strategy for Society* [27], issued by the Ministry of the Interior, indicates that the decisive part of the current shelter stock, approximately 85%, was created after 1971, when more modern shelter standards incorporating contemporary technologies were introduced. It follows that today's Finnish shelter stock cannot be understood as a collection of outdated protective structures from the immediate post-war period, but rather as infrastructure that was largely constructed and technically developed in the later decades of the twentieth century [27].

Already in the late Cold War period, it was apparent that Finland had created an exceptionally extensive and spatially differentiated shelter stock by European standards. The expert literature [29] states that, by the end of 1980, Helsinki alone had approximately 536,000 shelter places, of which around 118,000 were located in large rock shelters and approximately 14,000 shelter places were in the protected underground space of the metro. These data indicate that the Finnish concept was based not only on smaller building-specific shelters located in basements or underground parts of buildings, but also on large-capacity public or shared protective structures built into the bedrock [5], [29].

A significant change in the Finnish sheltering system occurred with the amendment to the Civil Protection Act of 1990 (*Laki väestönsuojelulain muuttamisesta*) [28], which represents one of the key primary sources for the modernisation of Finland's protective infrastructure. This amendment introduced new provisions that strengthened the planning and coordination character of civil protection. The state could approve general civil protection objectives and set deadlines for preparation and planning. Regions were required to prepare cooperation plans, and municipalities were obliged to draw up their own protection plans [28]. The responsibility of municipalities for protective measures for the population was confirmed, and the responsibility of the owner or holder of a building for protective measures required for a specific structure was newly emphasised. With regard to the shelter infrastructure itself, the amendment regulated the obligation to build protective spaces in new construction [2], [28]. A further fundamental change occurred after 1991, when the obligation to build shelters was extended to the entire territory of the state. From 1991 onwards, the Finnish system acquired a unified nationwide legal basis [30]. However, this change did not lead to an even spatial distribution of shelters, since the practical location of construction continued to be determined primarily by the settlement structure and the character of buildings. Shelters were built more frequently in cities, as larger buildings meeting the statutory requirements were designed there [2], [5].

The current Finnish legal framework is based primarily on the Rescue Act (Pelastuslaki) of 2011 [31], which provides that a shelter must be constructed for a building or a group of buildings located on the same plot if their floor area is at least 1,200 m² and the building is intended for permanent residence, work, or other permanent occupancy. For industrial, production, storage, and assembly buildings, the relevant floor area threshold is 1,500 m². Shelter construction is closely linked to the standard building process and forms part of the permitting procedure conducted by municipal building authorities. In this respect, the Finnish system of constructing protective structures provides an example of how population protection can be integrated into ordinary urban development and building law [31].

This direction in the development of the shelter stock was also confirmed by the 2017 Security Strategy for Society [27], which explicitly states that, in the event of armed conflict, the population is protected through shelters, spaces providing maximum protection, and evacuation, while also noting that preparedness for military threats remains the principal purpose of the construction of civil defence shelters in the future [27].

In terms of shelter typology, shelters in Finland are divided into the following categories [31]:

- property-specific shelters (S1) – shelters intended for a specific property or group of properties. Approximately 85% of Finnish shelters are private reinforced-concrete shelters integrated into individual buildings.
- shared shelters (S2) – shelters intended for multiple buildings or public shelters constructed primarily in large cities to supplement protection for the mobile population.
- bedrock/rock shelters – are typical especially of Helsinki and other larger urban centres and often combine public and shared protective functions [2], [26], [29].

The Finnish system is also characterised by the multipurpose use of shelters under peacetime conditions. Shelters are commonly used as storage facilities, sports facilities, garages, technical rooms, or club rooms, but only on the condition that they can be cleared and made operational within 72 hours if necessary. This requirement represents a key operational principle of the Finnish shelter stock model. Moreover, multipurpose use supports the continuous identification of technical defects and increases the likelihood that the condition of the shelter remains known to both the owners and users of the building [26], [32].

From the perspective of maintenance and operational readiness, the Finnish model is based on the responsibility of the building owner, who is responsible for ensuring that the shelter and its equipment remain in such a condition that they can be made operational within 72 hours. In the document *Most Civil Defence Shelters in Finland Are in Good Condition but Some Shelter Equipment Needs Maintenance* [33], the Ministry of the Interior explicitly stated that, in addition to regular annual maintenance, the operational condition of a shelter must be inspected at least once every ten years. From the perspective of scientific assessment, the Finnish system can be characterised as infrastructurally robust, but organisationally and operationally dependent on disciplined maintenance and high-quality methodological support for building owners [33].

The current extent of Finland's shelter stock confirms that the long-term continuity of construction and maintenance has led to an exceptionally high sheltering capacity. According to current official data, Finland has approximately 50,500 civil defence shelters with a capacity of around 4.8 million shelter places. In relation to the preliminary population of Finland at the end of February 2026, which amounted to 5,656,779 persons, this capacity represents approximately 85% of the population. This figure places Finland among the European countries with the highest level of population coverage. At the same time, however, it should be noted that a high overall figure does not imply uniform availability of protection for all residents [5], [30], [32], [33]. The Finnish system is not built according to the principle of geometric uniformity, but rather according to the actual distribution of the population, building structures, and urban centres [34].

Information on individual civil defence shelters is not available in a single nationwide public map; rather, information on the nearest shelter is included in the building's evacuation plan. This is due to the fact that the vast majority of shelters, approximately 85%, are private and are located in apartment buildings or offices. They are intended primarily for the residents of the building and employees [30], [32]. Public map sources contain only data and addresses concerning public civil defence shelters, which are usually provided by local rescue services on their websites.

In recent years, state activities in the field of population sheltering have been observable in Finland. In 2022–2023, the Ministry of the Interior carried out an extensive project focused on civil defence and shelters, the output of which was an analysis of the number and distribution of shelters. Another output was a detailed study of their current condition and recommendations for further development [33]. According to the analysis, 91% of the assessed shelters met the criteria for protection against the effects of conventional weapons, and 83% also met the criteria relating to scenarios involving gaseous and radiological hazards. The identified shortcomings concerned equipment, routine servicing, and the consequences of neglected maintenance [32]. In 2025, a new methodology [35] for the activation and use of shelters was submitted for consultation, and in January 2026 the Ministry issued three general guides:

- How to activate and use civil defence shelters : General guide,
- How to maintain and inspect civil defence shelters : General guide,
- Emergency plan : General guide [35].

These guides were a response to current geopolitical threats and justified the need to standardise the level of shelters, increase the competence of building managers, and strengthen the independent preparedness of society. The

guides serve as an essential methodological basis for building owners and property managers, enabling them to adapt to the new legal requirements that are to enter into force in 2027 [36].

Information support for civil protection in Finland is based on a multi-channel model. The emergency warning system [37] plays a fundamental role; it is issued through the general warning signal and simultaneously disseminated via radio, television teletext, web portals, the 112 Suomi application [38], and the Yle application, operated by the Finnish state-owned public service broadcasting company. The 112 Suomi application has approximately two million active users and serves not only for receiving warning messages, but also for other forms of official communication and localised information provision. For persons responsible for civil defence shelters, there is the VARA application, which is intended for the management of civil defence shelters. It serves to make shelters operational, train responsible persons, and provide the necessary information on how to keep shelters functional [32].

The range of threats for which the Finnish civil defence shelter system is currently designed is broader than the classic scenario of direct bombing of cities. Strategic documents [27] and public information materials state that the framework of preparedness and resilience of civil defence shelters includes military threats, hybrid activities, radiological hazards, the spread of hazardous substances, major emergencies, and other crises affecting the functioning of society [39]

For the area of individual preparedness, the nationwide guide *Preparing for Incidents and Crises* [39] was launched in 2024 on the Suomi.fi platform, bringing together instructions on how to behave during crises and emergencies, including military conflicts and civil defence. In February 2026, the Ministry of the Interior announced a project to develop a new function of the 112 Suomi application [38] for issuing warnings against airborne threats, inspired by experiences from Ukraine and funded by the European Union [40]. The current initiative of the Finnish state is therefore not limited to the structures themselves, but is directed towards a combination of legislative revision, methodological support, multi-channel warning, and the enhancement of public knowledge.

4. Selected Aspects of the Sheltering in Sweden

Sweden is a developed Scandinavian country with a relatively large territory, approximately 450,000 km², and a relatively low population in relation to its area, approximately 10.59 million inhabitants. The population has increased in the recent past, among other factors, as a result of migration and related factors. Sweden has a high proportion of inhabitants living in urban areas, approximately 88.9%. The capital and, at the same time, the largest city by population is Stockholm, with a population approaching one million inhabitants. Sweden is a member of international communities and security structures: it has been a member of the European Union since 1995, and after a long period of neutrality, Sweden became a member of the North Atlantic Treaty Organization only in 2024, in connection with the attack on Ukraine and the deterioration of the security situation in Europe. Sweden shares a natural land border with Finland and Norway, while also being located in proximity to areas of major importance for the geopolitical situation in Europe, particularly the Baltic states and the Russian Federation [13], [41], [42].

Sweden has a comprehensive system for the protection of its population and for crisis management. Linhart and Šilhánek [13] mention three areas of security development: civil protection, crisis management, and civil defence. Civil protection and crisis management together form a system that protects the population and other groups of assets against a broad spectrum of risks. Civil defence is oriented towards public security in wartime, and Linhart and Šilhánek [13] associate it, among other things, precisely with population sheltering. Civil defence is subsequently based on the principles of responsibility, whereby authorities responsible in peacetime remain responsible in wartime; decentralisation, meaning territorial and functional responsibility; and the personal responsibility of the population [13]. An interesting term used in the context of civil defence and other aspects of Sweden's security is "total defence", which denotes "*combined civil and military defensive capabilities that serve as a deterrent to war*" [43]. Linhart and Šilhánek [13] mention the concept of total defence in their earlier publication, and it is also emphasised in current official sources, for example [43]. It therefore appears to be a long-established principle of state security that remains valid even after the end of Sweden's period of neutrality.

In their 2009 publication [13], Linhart and Šilhánek state that the level of population protection provided by sheltering is the second highest in Europe after Switzerland, with approximately 68,000 shelters and a capacity of about 7.2 million shelter places, corresponding to roughly 80% of the population at the time the data were valid. The authors [13] also state that shelters are no longer being constructed or planned, but that the existing shelter stock is being maintained. More recent sources, for example [44], [45], confirm the absence of new shelter construction since 2002 and the effort to maintain the existing stock, while also reporting slightly lower numbers of shelters and a lower overall capacity. According to current information from the Swedish Civil Defence and Resilience Agency (Myndigheten för civilt försvar, SCDRA) [44], [45], there are approximately 64,000 shelters in Sweden, with a capacity for around 7 million people, providing the population with protection in the event of war. From the above, a declining trend can be inferred in terms of both the number of shelters and their total capacity, while at the same time, also in view of the growing population, the level of protection provided by sheltering has decreased. The official SCDRA source [45] states that the currently registered 64,000 shelters are in good condition and that inspections identify only minor and remediable deficiencies; nevertheless, it also declares the need to modernise some shelters and to examine possibilities for developing the shelter stock in view of current threats. The Frida tool [46] is available to responsible personnel for recording shelter inspections.

In cooperation with selected municipalities, the SCDRA is developing opportunities for volunteering in the field of civil defence, including sheltering. At present, participation is possible only indirectly through other voluntary organisations, but the initiative is declared on the SCDRA website [45].

A key role in the field of sheltering is played by the aforementioned SCDRA, formerly known as the Swedish Contingencies Agency. The SCDRA has a management and coordination role in the field of sheltering. It also maintains records of the number of shelters kept in operation, carries out inspections, and imposes corrective measures to remedy identified deficiencies. Maintenance, preparation, appropriate marking, and making the shelter accessible to residents are primarily the responsibility of the property owner. The property owner may be private or municipal; it may also be a housing association [45].

The SCDRA website also provides information support tools for sheltering, in particular information for the population, useful links, and a referral to a map application for locating shelters, as discussed later in the text [43].

Sweden has a firm normative legal basis for the issue of shelters, including a specific “Shelters Act” (Lag om skyddsrum) of 2006 [47]. The Shelters Act [47] primarily regulates the construction, equipment, and maintenance of shelters and introduces the concept of a shelter as a place for protecting the population in wartime. The need for a shelter and its location are decided by the government or by an authority designated by the government. According to the Act [47], the location of shelters is planned with regard to the ability of the population to move to shelters in time after a warning, and the possibility of using the shelter for other purposes in peacetime is required. The Shelters Act [47] is followed by the 2006 ordinance Förrordning om skyddsrum [48], which regulates certain details concerning shelters. In 2025, a legislative proposal [49] was published that is intended, among other things, to improve the situation in the field of sheltering and could potentially replace the existing Shelters Act. The proposal [49] responds, among other things, to changing conditions in Sweden and in its security environment and proposes expanding the existing shelter system to include so-called “protected spaces” (skyddade utrymmen), comprising, for example, selected basement spaces, which could increase both the availability and capacity of shelters. The normative legal acts in the field of sheltering are supplemented by further documents, for example the regulation Skyddsrum SR 15 [50], which regulates in detail various aspects of shelters, particularly construction and technical aspects.

As already stated, according to information from the SCDRA [44], [45], there are approximately 64,000 shelters in Sweden, with a capacity for around 7 million people, providing the population with protection in the event of war. The SCDRA website [44] also states that residents are expected to use the nearest available shelter, or another place with protective properties, such as a basement, tunnel, or metro station, and that residents are not assigned to a specific shelter. Shelters may be located in buildings, for example industrial or residential buildings, and are marked with the civil defence symbol, i.e., a blue triangle on an orange background, and the text SHELTER, in Swedish SKYDDSRUM. A daily updated map application [51], covering the entire territory of Sweden and providing further information on shelters, is used to locate shelters [44], [45].

Shelters in Sweden may serve another purpose in peacetime, but they must be capable of fulfilling their sheltering function within two days, which is associated in particular with states of high alert (höjd beredskap) or war (krig). This includes, among other things, a supply of water, the functionality of ventilation and heating, and the availability of toilet facilities. Some necessities, such as food or hygiene supplies, are not directly available in shelters, and residents are advised to bring them with them in the event of sheltering. Shelters have a defined capacity, and when this capacity is reached, it should be possible for residents to remain sheltered continuously for at least three days. Each person is allocated 0.75 m² of space in the shelter [45].

From the perspective of the protective properties of shelters, the SCDRA website [45] states: “*shelters are built to protect against shock waves and shrapnel from, for example, a grenade explosion, fire, chemical weapons and radiation from radioactive substances*”. Another version of the description of protective properties states that: “*shelter can withstand blast waves and shrapnel, fire, ionizing radiation, and debris from collapsed buildings*”. Shelters are equipped with a ventilation system to provide protection against the effects of toxic and radioactive substances from the external environment [45].

From the perspective of shelter distribution, the SCDRA states that the distribution of shelters is based on previous threat analyses, focuses on locations where evacuation may be potentially difficult, such as large urban areas, and that, in ensuring its security, Sweden has never had the ambition to build shelters for its entire population. According to SCDRA information, the need for sheltering therefore depends on the location of residents, and for residents living in less threatened areas, such as rural areas, the use of an alternative, improvised form of sheltering, for example in basement spaces, is assumed [45]. Linhart and Šilhánek [13] state that shelters are located mainly in areas with an increased probability of hostile air attack, and that most of them also serve as protection against ionising radiation in the event of radiological accidents. A combination of population sheltering and evacuation is assumed [13]. Current official sources, for example [45], do not directly refer to the use of shelters (skyddsrum) in radiological accidents, although they do mention resistance to ionising radiation. Instructions for the population on the krisinformation.se website [52] rather refer more generally to sheltering indoors than directly to shelters (skyddsrum).

The distribution of shelters is also directly evident from the previously mentioned map application for locating shelters [51]. The application allows available shelters to be searched through a web interface either by manually entering an address or by using the determination of the current location. The map displays shelters (skyddsrum) as well as “temporarily restricted” shelters (tillfälligt begränsat skyddsrum). After selecting a specific shelter, details can be displayed. The shelter details include information on the shelter’s code designation, shelter capacity, shelter address,

property designation, municipality name, the regulation according to which the shelter was constructed, whether under the current SR 15 regulation or an older one, see for example the overview here [53], and information on the duration of any possible functional restriction [51].

Information support for sheltering in Sweden is relatively extensive and comprehensive, with information clearly consolidated on the SCDRA website [43]. The necessary information is therefore easily accessible to shelter owners, professionals, and the general public. For property owners, the SCDRA provides, for example, information [54] relating to property owners' responsibility for shelters, contact details for sheltering specialists, the cancellation or temporary limitation of shelter operability, and standard solutions, calculations, and presentations for shelters. A publication [55] has also been issued for owners responsible for shelters, containing in particular information on the owner's responsibility and obligations, shelter maintenance, and how shelters may be used in peacetime. For professionals, an extensive gateway [56] is available, providing information on shelters from the perspective of various aspects of their functioning. For the general public, a suitably structured information overview [45] is available. In the above-mentioned sources, clarity is often enhanced by various forms of summaries of key information and answers to frequently asked questions. The previously mentioned map application [51] may also be included in sheltering information support. In addition to information directly concerning shelters, more general information related to the issue of sheltering can also be found, such as the guide for residents entitled "In Case of Crisis or War" [57].

The initiative in the field of sheltering development in relation to current threats and changes in the security environment, particularly as a result of the aggression against Ukraine and in relation to the character of contemporary conflicts, for example from the perspective of the use of drones, is directly evident from official SCDRA information [58]. Follow-up information, for example [59], points to a relatively comprehensive consideration of the possibilities for developing sheltering in Sweden, including from technical and legislative perspectives.

5. Research methodology

The presented paper follows the same research methodology as the authors' original article [1], which compared sheltering in the United States, the Czech Republic, Germany, and Austria. The research methodology again uses multi-criteria analysis to evaluate and compare additional selected countries, namely Sweden, Finland, and Switzerland.

The evaluation criteria were defined in the authors' earlier publication [1] as follows: legislation, standards and other guidelines; shelter capacity for the population in relation to protective characteristics; technical condition of shelters; range of threats (addressed by sheltering); current initiative in sheltering; information support for population.

The method used in the authors' earlier publication [1] to determine the weights of the criteria was the quantitative pairwise comparison method (the Saaty method), described for example in [60]. The resulting weights for the individual criteria are presented in Table 1.

Table 1.

Weights of the criteria determined using the Saaty method [1]

Criterion	Weight of the criterion
Legislation, standards and other guidelines	0.1317
Shelter capacity	0.1843
Technical condition	0.1769
Range of threats	0.1559
Current initiative	0.1756
Information support for population	0.1756

A scoring scale was proposed for each criterion, a detailed breakdown of which is available in the previous publication [1]. All criteria were designed as maximisation criteria, with the evaluation carried out on the above-mentioned scale by assigning scores ranging from 1 to 3. For the multi-criteria analysis, the weighted sum method, described for example in [61], was used, applying the weights determined by the Saaty method. Due to the use of a uniform scoring range on a scale from 1 to 3, it was possible to modify the weighted sum method so that the procedure does not include the conversion of the criterion matrix into a normalized criterion matrix. The criterion matrix, weights, and calculation results for the individual countries are shown in Table 2. The calculation using the weighted sum method is then based on Formula 1.

$$h(V_i) = \sum_{j=1}^k w_j \cdot h_{i,j} \quad (1)$$

where: $h(V_i)$ - the weighted sum of the sheltering approach evaluations (based on proposed scales for criteria) for the i -th country, $i \in \{1,2,\dots,8\}$; w_j - weight of the j -th criterion, $j \in \{1,2,\dots,6\}$; $h_{i,j}$ - evaluation of the i -th variant based on the j -th criterion.

6. Results of analysis

In Table 2, a multi-criteria analysis of the alternatives is presented - the weights were calculated using Saaty method, and the multi-criteria analysis itself was conducted using the weighted sum method. The evaluation of the alternatives for each criterion is based on a consensus among the authors.

The results of the multi-criteria analysis are presented in Table 2 for the newly assessed countries, Finland, Switzerland, and Sweden, while the results of the authors' previous research [1], in which the assessed countries were the United States, Poland, the Czech Republic, Germany, and Austria, are also included. The results indicate a relatively substantial predominance of the newly assessed countries over the previously assessed countries, which corresponds to the emphasis placed by the selected Scandinavian countries and Switzerland on population sheltering as a key element of population protection. Details of the research results and a partial comparison with the Czech Republic are summarised in the conclusion.

Table 2.

Multi-criteria analysis including the results of the previous analysis [1]

Criteria	Legislation, standards and other guidelines	Shelter capacity	Technical condition	Range of threats	Current initiative	Information support for population	Weighted sum	Rank
Weight (rounded)	0.1317	0.1843	0.1769	0.1559	0.1756	0.1756		
Finland	3	3	3	3	3	3	3.0000	1.-2.
Switzerland	3	3	3	3	3	3	3.0000	1.-2.
Sweden	3	3	3	2	3	3	2.8441	3.
United States	3	1	1	3	2	3	2.1020	4.
Poland	2	1	1	2	3	2	1.8145	5.
Czech Republic	2	1	2	2	1	1	1.4645	6.
Germany	2	1	1	1	2	1	1.3073	7.
Austria	1	1	1	1	1	1	1.0000	8.

7. Conclusions

The analysis showed that a common feature of all newly assessed countries, Switzerland, Finland, and Sweden, is the inclusion of sheltering within the system of total national defence, and that sheltering is regarded as a fundamental measure of population protection. This is also reflected in the capacity and technical condition of shelters, which are at a much higher level than in some examples of previously analysed European countries [1]. Switzerland has the highest shelter stock capacity, with the number of shelter places exceeding the size of the population; however, local deficiencies do occur. Finland also has a very high capacity, covering approximately 85% of the population. Sweden has a lower capacity, currently covering approximately 65% of the population, with the trend tending to decline. In Finland and Sweden, moreover, the shelter stock is spatially differentiated, with sheltering provided mainly in areas with a high concentration of population. The technical condition of shelters in all three countries assessed is generally evaluated as good. In addition, Switzerland plans to decommission shelters reaching an age of 40 years and replace them with large-capacity shelters, particularly in locations with lower sheltering capacity.

A significant difference can also be observed in the fact that, compared with the Czech Republic, Austria, or Germany [1], the Nordic countries and Switzerland have the issue of population sheltering firmly embedded in normative legal acts and other documents defining the construction, maintenance, purpose, and corresponding technical parameters of shelters, including the provision of their financing. A common feature of all three analysed countries is also the involvement of property owners in responsibility for ensuring sheltering.

As regards the spectrum of threats, compared with the other European countries mentioned above, the sheltering system in all three assessed countries is built primarily for the needs of armed conflict, especially nuclear war. Switzerland, however, also indicates the potential use of shelters in the event of natural or technological disasters. Finland likewise takes into account not only military threats but also other types of threats, such as hybrid threats and radiological or chemical accidents. Sweden, however, continues to focus primarily on protection in the event of war.

Another common feature of all the assessed countries is the increased emphasis on civil protection, particularly in the updating of normative legal acts and the reconstruction or modernisation of protective capacities. This reflects the adaptability of the system to the evolving security environment, especially in connection with the war in Ukraine. Compared with these countries, the Czech Republic in particular shows a lower level of systematic renewal and development of protective infrastructure, while its approach places greater emphasis on improvised sheltering. In this area, however, recent efforts can be observed in the Czech Republic to establish the basis for the organisation, planning,

and registration of improvised shelters [62], as well as methodological support for the procedure of selecting spaces suitable for the construction of improvised shelters [63]

In the area of information support for the population, noticeable differences exist among the countries. Switzerland has a rather closed and address-based system, in which information on specific shelters is generally not publicly disclosed. Population preparedness is supported both through compulsory military service and through information support provided by the Federal Office for Civil Protection, its websites, and applications. Finland uses a multi-channel model comprising warning systems, mobile applications, and methodological guides, while basic information on shelters is partially made public, either in public map sources or in building evacuation plans. Sweden, by contrast, has a very open and transparent system, including a publicly accessible shelter map application and extensive information materials for various target groups.

The findings suggest that an effective sheltering system in the countries analysed in this paper is contingent upon sustained political support, a clear legislative framework, and the integration of protective infrastructure into the broader framework of national security. However, the multi-criteria analysis carried out using the defined set of criteria and calculated weights [1] did not identify significant differences among the newly assessed countries; a more detailed comparison would require adjustment of the evaluation scales for the individual criteria. Nevertheless, the results may serve as a basis for formulating recommendations aimed at strengthening population protection systems in other selected countries.

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References

1. **Kincl, P., Pupíková, J., Oulehlová, A., Barta, J.** Approaches to the Population Sheltering in Selected Countries in Relation to Threats and the Security Environment. CNDCGS 2024. Proceedings of the Challenges to National Defence in Contemporary Geopolitical Situation. Brno, 2024. p. 139-148.
2. Wissenschaftliche Dienste: Zivile Schutzbauwerke in Deutschland und in ausgewählten Staaten. Sachstand WD 3 - 3000 - 056/22. 2022, Berlin: Deutscher Bundestag. -27 p.
3. **Forfang Rongved G.** (Ed.). European Total Defence: Past, Present and Future. 2025, London: Routledge. -302 p.
4. **Berger Ziauddin S.** Superpower underground: Switzerland's rise to global bunker expertise in the atomic age. *Technology and Culture*, 2017, 58(4), p. 921-954.
5. **Řehák D., Pupíková J.** Ukrytí obyvatelstva v České republice. 2015, Ostrava: SPBI. -79 p.
6. **Marti S.** Den modernen Krieg simulieren: Imaginationen und Praxis totaler Landesverteidigung in der Schweiz. In *Das Imaginäre des Kalten Krieges: Beiträge zu einer Kulturgeschichte des Ost-West-Konfliktes in Europa*; Eugster D., Marti S. Klartext: Essen, 2015; p. 243-268.
7. **Berger Ziauddin S.** Superpower underground: Switzerland's rise to global bunker expertise in the Atomic Age. *Technology and Culture*, 2017, 58, p. 921-954.
8. **McGee A. A.** Swiss Civil Defense. 1965, Menlo Park: Stanford Research Institute. -44 p.
9. **Marti S.** Framing Civil Defence Critique: Swiss Physicians' Resistance to the Coordinated Medical Services in the 1980. In *Cold War Civil Defence in Western Europe*; Cronqvist M., Farbøl R., Sylvest C. Palgrave Macmillan: Cham, 2022; p. 183-207.
10. **Flury Ch.** Zivilschutz. Historischen Lexikons der Schweiz (HLS). Schweizerische Akademie der Geistes- und Sozialwissenschaften, 2015. Available online: <https://hls-dhs-dss.ch/de/articles/008694/2015-02-03/> (accessed on 13 March 2026).
11. Switzerland. Bericht des Bundesrates an die Bundesversammlung über die Konzeption 1971 des Zivilschutzes (BBl 1971 II 516 vom 11. August 1971). Available online: https://www.fedlex.admin.ch/eli/fga/1971/2_516__de (accessed on 13 March 2026).
12. Bundesamt für Bevölkerungsschutz. Schutzbauten. BABS, 2025. Available online: <https://www.babs.admin.ch/de/schutzbauten> (accessed on 26 March 2026).
13. **Linhart P., Šilhánek B.** Ochrana obyvatelstva ve vybraných evropských zemích. 2 d. 2009, Praha: MV-GŘ HZS ČR. -193 p.
14. Switzerland. Bundesgesetz über den Bevölkerungsschutz und den Zivilschutz (SR 520.1 vom 20. Dezember 2019, Stand am 1. Januar 2026). Bern: Bundesversammlung der Schweizerischen Eidgenossenschaft, 2026. Available online: <https://www.fedlex.admin.ch/eli/cc/2020/887/de> (accessed on 13 March 2026).
15. ALERTSWISS. Schutzbauten: Der Unterschied zwischen Schutzanlagen und Schutzräumen. BABS, 2016. Available online: <https://blog.alertswiss.ch/de/rubriken/vorsorge/schutzbauten-der-unterschied-zwischen-schutzanlagen-und-schutzraeumen/> (accessed on 26 March 2026).
16. Bundesamt für Bevölkerungsschutz. Der Schutzraum. Informationen zu Zweck, Aufbau und Nutzung von Personenschutzräumen. 2023, Bern: Bundesamt für Bevölkerungsschutz BABS. -16 p.
17. Bundesamt für Bevölkerungsschutz. Schutzanlagen für den Bevölkerungsschutz. BABS, 2025. Available online: <https://www.babs.admin.ch/de/schutzanlagen-fur-den-bevolkerungsschutz> (accessed on 26 March 2026).
18. Switzerland. Zivilschutzverordnung (SR 520.11 vom 11. November 2020, Stand am 1. Januar 2026). Bern: Schweizerische Bundesrat, 2026. Available online: <https://www.fedlex.admin.ch/eli/cc/2020/888/de> (accessed on 29 March 2026).

19. Konzept Schutzbauten Planungsgrundlage für die Weiterentwicklung und den Werterhalt der Schutzräume, Kommandoposten und Bereitstellungsanlagen. 2023, Bern: Bundesamt für Bevölkerungsschutz BABS. -56 p.
20. **Ibrahim S., Bondolfi S.** Wie sich die Schweiz auf eine mögliche nukleare Eskalation vorbereitet. SWI, 2022. Available online: <https://www.swissinfo.ch/ger/wissen-technik/wie-sich-die-schweiz-auf-eine-moegliche-nukleare-eskalation-vorbereitet/48024630> (accessed on 27 March 2026).
21. Switzerland is spending millions revamping its vast network of bunkers. The Washington Post, 2025. Available online: <https://www.washingtonpost.com/world/2025/10/25/switzerland-nuclear-bunkers-overhaul/> (accessed on 1 April 2026).
22. ALERTSWISS home page. Bundesamt für Bevölkerungsschutz. ALERTSWISS. Available online: <https://www.alert.swiss/en/home.html> (accessed on 1 April 2026).
23. Bundesamt für Bevölkerungsschutz. Unterlagen Schutzbauten. BABS, 2023. Available online: <https://www.babs.admin.ch/de/unterlagen-schutzbauten> (accessed on 1 April 2026).
24. Bundesamt für Bevölkerungsschutz. Publikationen Zivilschutz und Ausbildung. BABS, 2024. Available online: <https://www.babs.admin.ch/de/publikationen-zsa> (accessed on 1 April 2026).
25. Finland. Västönsuojelulaki (438/1958). Helsinki: Finlex, 1958. Available online: <https://finlex.fi/fi/lainsaadanto/saaduskokoelma/1958/438> (accessed on 13 March 2026).
26. Ministry of the Interior. Civil Defence. Pelastustoimi Ráádningsväsendet. Available online: <https://pelastustoimi.fi/en/rescue-services/preparedness/civil-defence> (accessed on 13 March 2026).
27. Security Committee. Security Strategy for Society. 2017, Helsinki: Government Resolution. -99 p. Available online: https://turvallisuuskomitea.fi/wp-content/uploads/2018/04/YTS_2017_english.pdf (accessed on 13 March 2026).
28. Finland. Laki västönsuojelulain muuttamisesta (304/1990). Helsinki: Finlex, 1990. Available online: <https://finlex.fi/sv/lagstiftning/forfattningssamling/1990/304> (accessed on 13 March 2026).
29. Ministry of the Interior. Civil Defence. Civil defence shelters in Helsinki. Pelastustoimi Ráádningsväsendet. Available online: <https://pelastustoimi.fi/en/helsinki/services/civil-defence-in-helsinki/civil-defence-shelters-in-helsinki> (accessed on 14 March 2026).
30. Ministry of the Interior. Ministry of the Interior's report: Finland has civil defence shelters for about 4.8 million people. Pelastustoimi Ráádningsväsendet, 2023. Available online: <https://pelastustoimi.fi/en/-/1410869/finland-has-civil-defence-shelters-for-about-4.8-million-people> (accessed on 13 March 2026).
31. Finland. Pelastuslaki (379/2011). Helsinki: Finlex, 2011. Available online: <https://finlex.fi/en/legislation/translations/2011/eng/379> (accessed on 14 March 2026).
32. Ministry of the Interior. Civil defence shelters would be used during military threat. Helsinki: Ministry of the Interior. Available online: <https://intermin.fi/en/rescue-services/preparedness/civil-defence-shelters> (accessed on 16 March 2026).
33. Ministry of the Interior. Most Civil Defence Shelters in Finland Are in Good Condition but Some Shelter Equipment Needs Maintenance. Ministry of the Interior, 2023. Available online: <https://intermin.fi/en/-/most-civil-defence-shelters-in-finland-are-in-good-condition-but-some-shelter-equipment-needs-maintenance> (accessed on 16 March 2026).
34. Statistics Finland. Finland in Figures 2025. Statistics Finland, 2025. Available online: <https://otos.stat.fi/bitstreams/f814d535-d394-411b-b813-daea6e78ead3/download> (accessed on 27 March 2026).
35. Ministry of the Interior. New Guides Provide Advice on Planning and Maintenance of Civil Defence Shelters. Ministry of the Interior, 2026. Available online: <https://pelastustoimi.fi/en/-/1410869/new-guides-provide-advice-on-planning-and-maintenance-of-civil-defence-shelters> (accessed on 1 April 2026).
36. Ministry of the Interior. Government programme measures in rescue services. Ministry of Interior. Available online: <https://intermin.fi/en/rescue-services/government-programme-measures-in-rescue-services> (accessed on 1 April 2026).
37. Ministry of the Interior. Emergency warning. Pelastustoimi Ráádningsväsendet. Available online: <https://pelastustoimi.fi/en/home-everyday-life/emergencies/emergency-warning> (accessed on 7 April 2026).
38. 112 Suomi -application. Emergency Response Centre Agency. Available online: <https://112.fi/en/112-suomi-application> (accessed on 7 April 2026).
39. Suomi.fi. Preparing for Incidents and Crises. Digital and Population Data Services Agency, 2024. Available online: <https://www.suomi.fi/guides/preparedness> (accessed on 7 April 2026).
40. Ministry of the Interior. Further Development of 112 Suomi App to Draw on Lessons from Ukraine. Ministry of the Interior, 2026. Available online: <https://intermin.fi/en/-/further-development-of-112-suomi-app-to-draw-on-lessons-from-ukraine> (accessed on 7 April 2026).
41. **Dyvik E. H.** Demographics of Sweden - statistics & facts. Statista, 2025. Available online: <https://www.statista.com/topics/9129/demographics-of-sweden/?srsltid=AfmBOoBDnyJHA8117n9ODDj5XBplBnt7xazhGupOx1KPr39nwUpHsb#topicOverview> (accessed on 2 April 2026).
42. Statista Research Department. Share of urban population in Sweden from 1960 to 2024. Statista, 2026. Available online: <https://www.statista.com/statistics/455935/urbanization-in-sweden/> (accessed on 2 April 2026).
43. Swedish Civil Defence and Resilience Agency. Our mission. MCF, 2025. Available online: <https://www.mcf.se/en/about-us/our-mission/> (accessed on 20 March 2026).
44. Myndigheten för civilt försvar. Skyddsrumskarta. MCF, 2025. Available online: <https://www.mcf.se/sv/verktyg-tjanster/skyddsrumskarta/> (accessed on 20 March 2026).

45. Myndigheten för civilt försvar. Bra att veta om skyddsrum. MCF, 2025. Available online: <https://www.mcf.se/sv/rad-till-privatpersoner/skyddsrum-utrymning-och-varningssystem/bra-att-veta-om-skyddsrum/> (accessed on 21 March 2026).
46. Myndigheten för samhällsskydd och beredskap. Frida. Available online: <https://frida.msb.se/> (accessed on 23 March 2026).
47. Sweden. Lag om skyddsrum (2006:545, ändrad 2010:919). Stockholm: Regeringskansliet, 2010. Available online: https://www.riksdagen.se/sv/dokument-och-lagar/dokument/svensk-forfattningssamling/lag-2006545-om-skyddsrum_sfs-2006-545/ (accessed on 23 March 2026).
48. Sweden. Förordning om skyddsrum (2006:638, ändrad 2025:1118). Stockholm: Regeringskansliet, 2025. Available online: https://www.riksdagen.se/sv/dokument-och-lagar/dokument/svensk-forfattningssamling/forordning-2006638-om-skyddsrum_sfs-2006-638/ (accessed on 23 March 2026).
49. Sweden. Regeringens proposition 2025/26:142 ett starkare skydd för civilbefolkningen. Stockholm: Sveriges regering, 2026. Available online: https://www.riksdagen.se/sv/dokument-och-lagar/dokument/proposition/ett-starkare-skydd-for-civilbefolkningen-vid-hojd_hd03142/ (accessed on 26 March 2026).
50. Myndigheten för samhällsskydd och beredskap. Skyddsrum SR 15. 2025, Karlstad: MSB. -148 p. Available online: https://www.mcf.se/contentassets/f368c02e73db47ed88e8abae3932eabf/skyddsrum-sr-15-2025_251215.pdf (accessed on 26 March 2026).
51. Myndigheten för samhällsskydd och beredskap. MSB:s skyddsrumskarta. MSB, 2025. Available online: <https://msbgis.maps.arcgis.com/apps/instant/nearby/index.html?appid=8bfc89e7c6064bc181c6a1a6bbac2fa3&slideDistance=1> (accessed on 21 March 2026).
52. Krisinformation.se. Nuclear accidents. Swedish Civil Defence and Resilience Agency, 2025. Available online: <https://www.krisinformation.se/en/hazards-and-risks/nuclear-accidents/> (accessed on 1 April 2026).
53. Utrustning för skyddsrum. Myndigheten för civilt försvar, 2026. Available online: <https://www.mcf.se/sv/amnesomraden/beredskap-for-kris-och-krig/befolkningsskydd/skyddsrum-och-andra-skyddade-platser/utrustning-for-skyddsrum/> (accessed on 1 April 2026).
54. Myndigheten för civilt försvar. Fastighetsägares ansvar för skyddsrum. MCF. Available online: <https://www.mcf.se/sv/amnesomraden/beredskap-for-kris-och-krig/befolkningsskydd/skyddsrum-och-andra-skyddade-platser/fastighetsagare/> (accessed on 1 April 2026).
55. Myndigheten för samhällsskydd och beredskap. Till dig som äger och ska underhålla ett skyddsrum. 2022, Karlstad: MSB. -12 p. Available online: <https://rib.msb.se/filer/pdf/29962.pdf> (accessed on 07 April 2026).
56. Myndigheten för civilt försvar. Skyddsrum och andra skyddade platser. MCF. Available online: <https://www.mcf.se/sv/amnesomraden/beredskap-for-kris-och-krig/befolkningsskydd/skyddsrum-och-andra-skyddade-platser/> (accessed on 3 April 2026).
57. The Swedish Civil Contingencies Agency. In case of crisis or war. 2024, Karlstad: MSB. -32 p. Available online: <https://rib.msb.se/filer/pdf/30874.pdf> (accessed on 07 April 2026).
58. Myndigheten för civilt försvar. Morgondagens skyddsrum – prototyper för ett stärkt civilt försvar. MCF. Available online: <https://www.mcf.se/sv/amnesomraden/beredskap-for-kris-och-krig/befolkningsskydd/skyddsrum-och-andra-skyddade-platser/morgondagens-skyddsrum-prototyper-for-ett-starkt-civilt-forsvar/> (accessed on 2 April 2026).
59. Myndigheten för civilt försvar. Utvecklingsbehov av skyddsrum. MCF, 2026. Available online: <https://www.mcf.se/sv/amnesomraden/beredskap-for-kris-och-krig/befolkningsskydd/skyddsrum-och-andra-skyddade-platser/morgondagens-skyddsrum-prototyper-for-ett-starkt-civilt-forsvar/utvecklingsbehov/> (accessed on 21 March 2026).
60. **Saaty, T.L.** Relative measurement and its generalization in decision making why pairwise comparisons are central in mathematics for the measurement of intangible factors the analytic hierarchy/network process. *Revista de la Real Academia de Ciencias Exactas, Físicas y Naturales. Serie A. Matemáticas*, 2008, 102(2), p. 251–318.
61. **Coronicova Hurajova, J., Hajduova, Z.** Multiple-Criteria Decision Analysis Using TOPSIS and WSA Method for Quality of Life: The Case of Slovakia Regions. *Mathematics*, 2021, 9(19): 2440.
62. **Dohnal, F., Zeman, T., Barta, J. et al.** Ukrytí obyvatelstva před nebezpečím. 2025, Brno: Univerzita obrany. -120 p.
63. **Štoller, J., Rak, J., Zezulová, E., Maňas, P., Kudlák, A., Vrbka, J., Pupíková, J., Zeman, T.** Metodika plánování a evidence improvizovaných úkrytů. CERO 01/2025. 2025, Brno: Univerzita obrany. -56 p.

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