

An aerial photograph of the Warsaw Old Town at sunset. The sky is filled with orange and yellow clouds. The Polish flag is on the left and the Finnish flag is on the right. The text is centered over the image.

Civil Protection and Civil Defence in Finland and Poland 2025

Warsaw 8.-9.10.2025

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Adaptation and modernization of existing facilities - examples from Finland

Modernizing an existing facility

- Assessment
- Planning and design
- Implementation
- Commissioning

Assessment:

means a thorough assessment of the shelter's condition and identifying areas that need improvement. In particular:

- structural integrity
- cracks and openings or penetrations jeopardizing gas tightness
- condition of all aspecial protective equipment and systems and building services technology paying special attention to the CBRN filtration system

Planning and design:

Developing renovation and modernising plan based on the results of the assessment and defining the budget available for the undertaking with emphasis on:

- with good planning and using today's protective equipment it is possible to increase the protection level
- The plan should include a feasible normal time use for the shelter

Converting an existing space into shelter

- Locating candidates for conversion
- Assessment
- Planning and design
- Implementation
- Commissioning

Locating candidates for conversion:

An ideal target for the conversion is an underground space having inherent protection against mechanical weapons effects provided by its subterranean location. The load bearing structures should preferably be made of reinforced concrete avoiding frangible, spalling or delaminating materials at critical parts of the construction. Underground car parks, storage facilities and metro stations are usually feasible candidates for the conversion, but also above ground reinforced concrete buildings such as industrial buildings and other robust facilities may be considered

Modernizing an existing facility

Implementation:

The national system of construction governance should be the primary driver for the implementation of the structural work related to the renovation project.

In addition to the potential structural work, changing all protective equipment and systems not assessed to be in functional condition guarantees that the shelter can sustain its kinetic and CBRN protection. Selecting only fully tested and approved protective equipment and systems with guaranteed spare parts supply is necessary.

Commissioning:

Following the completion of the conversion project, commissioning is necessary:

- to ascertain structural integrity, air/gas tightness and functioning of all equipment and systems
- the most important part of the commissioning is a tightness test to check the air/gas tightness of the shelter structure and all protective equipment designed to sustain air/gas tightness of ventilation openings, utility penetrations and passageways through the shelter structure



In either case:

Establish a comprehensive maintenance program for the shelter, including appointing person(s) responsible for its execution.

Converting an existing space into shelter

Assessment:

Based on the actual building details and site visits the selected space should be assessed for:

- Structural capacity and integrity
- Access and exit ways
- Layout
- Achievable protection level
- Effect of collapse of nearby buildings
- Possibilities to arrange ventilation and cooling
- Electrical and electronic systems

Planning and design:

Developing a conversion plan based on the results of the assessment setting the overall scope, goal and budget for the conversion project.

Implementation:

Following the scope and goal of the project paying special attention to:

- Proper reinforcement and sealing of the structures
- Fully tested and certified shelter protective equipment with guaranteed spare parts supply
- Importance of the CBRN filtration system

Commissioning:

Following the completion of the conversion project, commissioning is necessary to ascertain structural integrity, air/gas tightness and functioning of all equipment and systems.

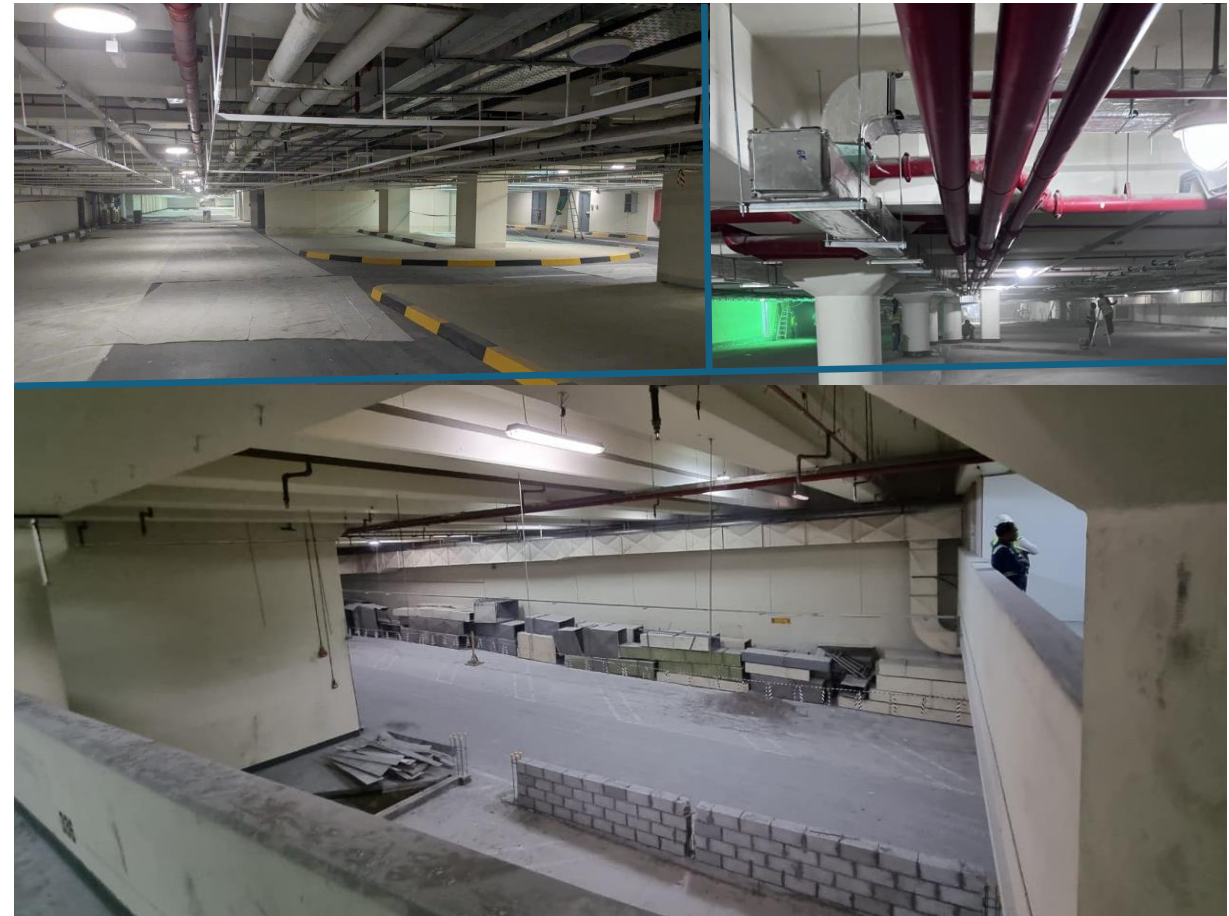
Modernizing an existing facility, use case

before



Converting an existing space into shelter, use case

before



Modernizing an existing facility, use case

after



Converting an existing space into shelter, use case

after



Modernizing an existing facility, use case

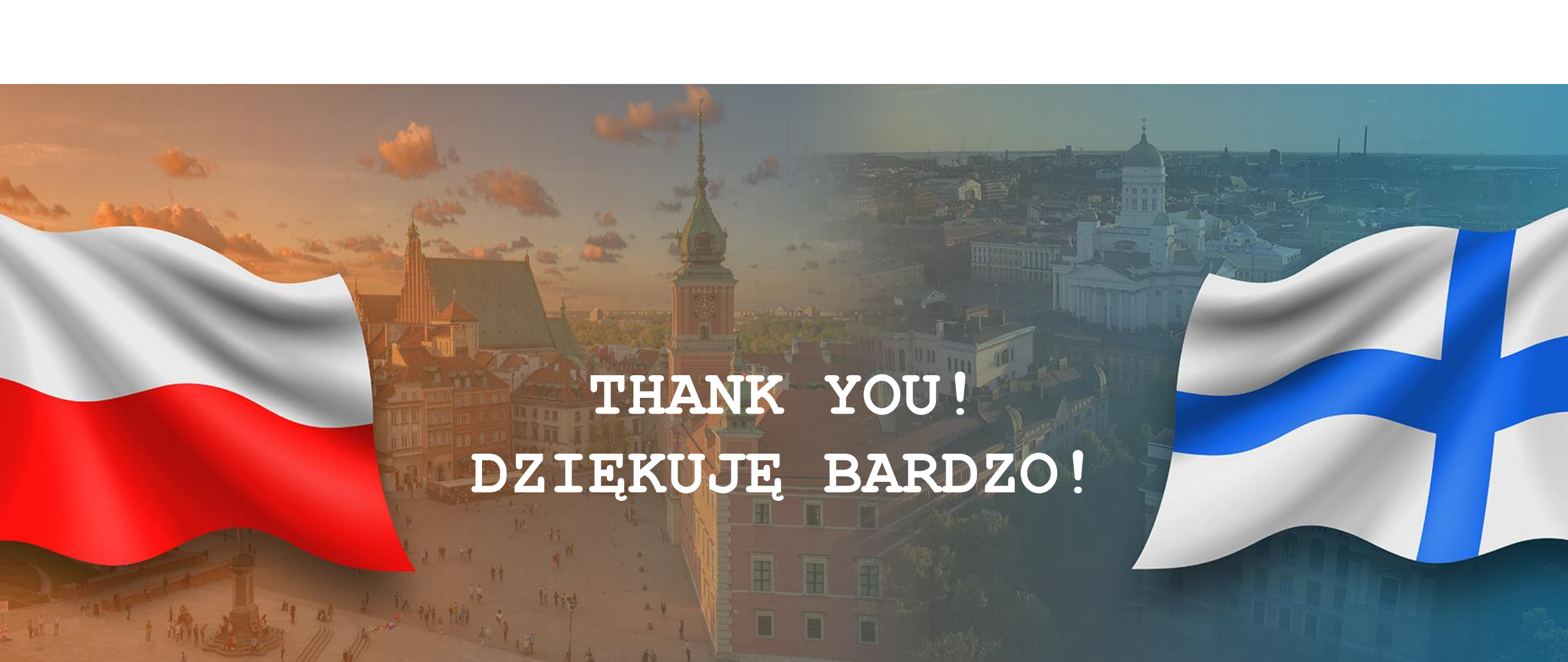
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Converting an existing space into shelter, use case

after





THANK YOU!
DZIĘKUJĘ BARDZO!

Jyrki Ronkainen