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Buildings and civil engineering works — Building resilience strategies related to public health emergencies — Compilation of relevant information

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Foreword

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This document was prepared by Technical Committee ISO/TC 59, *Buildings and civil engineering works*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

Looking back at the history of building design, improvements have sometimes been driven by epidemics, such as the 19th century cholera outbreak in London, which led to a greater emphasis on ventilation and the use of dense, easy-to-clean materials such as tiles rather than carpets[1]. After the 1918 flu pandemic, guest bathrooms were added to residences to reduce exposure and infection risk[2].

Improvements are still required in public health emergencies of the 21st century where buildings based on current design standards show inadequate adaptability. In COVID-19, for example, large numbers of densely populated public buildings such as schools, offices, malls were forced to close due to high risk of infection. Even in homes the risk of infection still existed. Medical facilities could not bear the sudden increase in infectious patients, and some sports stadiums, exhibition halls, etc., were transformed into temporary hospitals. In face of these challenges, a number of improvements have already appeared in some cases, as well as in some guidelines, standards and studies by relevant international, national, and regional organizations and institutions.

This document collects the challenges posed by the epidemic to built environment and the corresponding adaptation solutions during 21st century public health emergencies, particularly COVID-19, to provide a reference for resilience design of built environment to adapt to future changing environment.

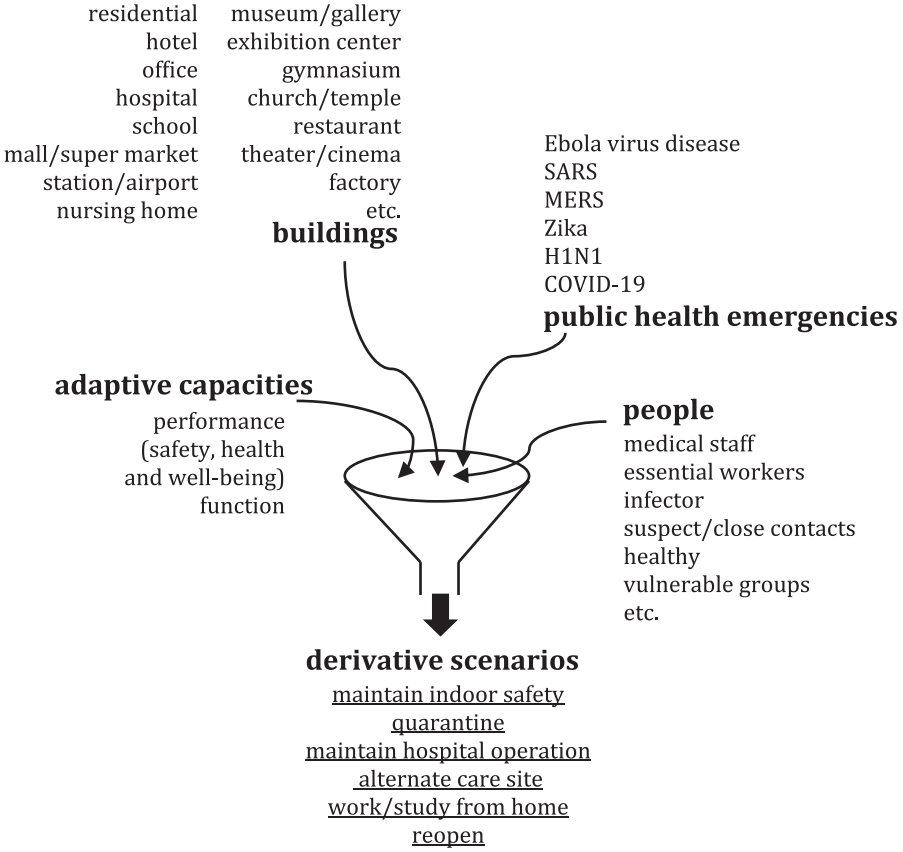


Figure 1 — Generation of derivative scenarios

For better comprehension, this document categorizes the challenges and solutions in terms of six typical derivative built environment scenarios during the pandemic, including maintaining indoor safety, quarantine, maintaining hospital operation, alternate care site, working/studying from home, and reopening. These six scenarios are informed by an information search based on combinations of such key words as different population groups, building types, public health emergencies and adaptive capacities (see Figure 1).

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The document is helpful to stakeholders including end-users, investors, authorities, standards developing organisations, specialists (engineers, architects, etc.), manufacturers and builders, as well as other parties involved in public health emergencies, such as public health administrators, medical staff.

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TECHNICAL REPORT **ISO/TR 5202:2023(E)**

Buildings and civil engineering works — Building resilience strategies related to public health emergencies — Compilation of relevant information

1 Scope

This document provides a compilation of relevant information on building resilience strategies in response to public health emergencies, including:

— challenges of public health emergencies on built environment;

— resilience strategies to meet the challenges;

excluding:

— emergency operations;

— personnel organization and management.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
resilience
adaptive capacity of an organization in a complex and changing environment

[SOURCE: ISO Guide 73:2009, 3.8.1.7]

4 Concept

4.1 Resilience

Buildings with a service life of decades or even hundreds of years can encounter challenges that were not anticipated when they were designed. Resilience of built assets can reduce losses in the future complex and changing environment.

4.2 Public health emergencies

Expressions of public health emergency vary in different contexts. They are generally described as the events that seriously affect public health. Table 1 lists some typical expressions.

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