



International
Standard

ISO 22328-2

**Security and resilience —
Emergency management —**

**Part 2:
Guidelines for the implementation
of a community-based early
warning system for landslides**

Sécurité et résilience — Gestion des urgences —

*Partie 2: Lignes directrices pour la mise en oeuvre d'un système
d'alerte locale immédiat de glissement de terrain*

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 292, *Security and resilience*, Subcommittee SC 1, *Emergency management*.

This second edition cancels and replaces the first edition (ISO 22327:2018), which has been technically revised.

The main changes are as follows:

- this document has been aligned with the generic guidelines on EWS in ISO 22328-1, with the addition of specific information related to landslides. This document has also been aligned with ISO 22322 and ISO 22315.
- some terms have been removed from [Clause 3](#);
- the seven main sub-systems of landslide EWS have been revised to five main sub-system. The "Response capability" has been added as one of the main systems, and the previous three main sub-systems from the first edition have been merged into the "response capability" sub-system: (1) establishment of a disaster preparedness team; (2) development of an evacuation route and map; (3) development of standard operating procedures.
- [Annexes A](#) and [B](#) have been modified by adding ISO 22578:2022, Figures A.4 and A.6;
- [Annexes C](#) and [D](#) and the Bibliography have been updated.

A list of all parts in the ISO 22328 series can be found on the ISO website.

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.

Introduction

Landslides are one of the commonly occurring natural hazards. Landslides can occur in different types of topographic and environmental settings. The occurrence of landslides can increase significantly due to uncontrolled land use development and human interference into slopes. In many countries, landslides cause substantial socio-economical losses and lead to environmental changes.

Landslide mitigation can be carried out both by structural and non-structural efforts. Structural mitigation includes adjustment of slope geometry, slope reinforcement, and protection and improvement of drainage systems, all of which involve a high cost. The alternative option of relocation is not practical for residents living in areas prone to landslides. As a result, non-structural mitigation can be effective in reducing disaster risk by improving the community's preparedness, for example, by implementing an early warning system (EWS).

This document complements the generic guidelines on EWS described in ISO 22328-1^[5] with specific information related to landslides. It is also complementary to the guidelines on public warning in ISO 22322^[4] as well as the guidelines on planning mass evacuations in ISO 22315.^[3]

Security and resilience — Emergency management —

Part 2:

Guidelines for the implementation of a community-based early warning system for landslides

1 Scope

This document gives guidelines for the implementation of a community-based disaster early warning system (EWS) for landslides. It complements the generic guidelines in ISO 22328-1.^[5] It describes the methods and procedures, implementation methods and activities specifically related to landslides.

This document is applicable to communities vulnerable to landslides, without taking secondary/indirect effects into consideration.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 22300, *Security and resilience — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 22300 and the following 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

mass movement

displacement of materials such as soil, rock, mud, snow or a combination of matter down a slope under the influence of gravity

3.2

landslide

wide variety of processes that result in the slow movement downward and outward of slope-forming materials including rock, soil, artificial fill or a combination of these under the influence of gravity

4 Landslide early warning system

4.1 General

The community-based landslide EWS should be based on ISO 22328-1.^[5] It should involve community participation in the landslide risk reduction plan based on their understanding of landslide hazard, exposure, vulnerability and resilience.