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Nationale Plattform Naturgefahren PLANAT
Plate-forme nationale «Dangers naturels»
Piattaforma nazionale «Pericoli naturali»
National Platform for Natural Hazards

Management of risks from natural hazards

Strategy 2018







We are a society that is competent about risk – we are aware and far-sighted in our management of risks from natural hazards.



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Preface



A secure setting in which to live and do business is a prerequisite for prosperity and quality of life. But security is not a given. Natural events can threaten people, material assets and a country's economic vitality.

In light of Switzerland's exposure to natural hazards, there is a long tradition of awareness in dealing with them. That awareness is important to our country's development and is reflected in the constitutional mandate to protect the population and to preserve natural resources essential to livelihood.

The Federal Council took note of the "Protection against natural hazards" strategy in 2003 and set a further milestone in 2005 by adopting an action plan to push forward its implementation. That initiated the transition from a purely emergency-based response to a comprehensive risk culture and integrated risk management. While this approach has increasingly established itself among public authorities, policymakers and the population, it has yet to be consistently implemented in practice.

Past and present protection efforts notwithstanding, the increasing utilisation of our living environment and the rise in extreme weather events associated with climate change are heightening the risks from natural hazards. At the same time, resources for managing natural hazards are limited. Recognition of this led to the conclusion of the Hyogo 2005 and Sendai 2015 framework agreements at international level. In Sendai, the international community adopted seven global targets and four priorities for action to reduce disaster risks. However, Switzerland too has seen changes in its national situation since "Protection against Natural Hazards" was published: strategies that have been developed in various policy areas (e.g. sustainable development, adaptation to climate change) bear on mitigation of risks from natural hazards. This has seen advances since 2003 – not least in result of experience gained from natural events such as the floods of 2005.

With these considerations in mind, PLANAT has updated its 2004 strategy. The updated strategy 2018 defines objectives for managing risks from natural hazards and sets out the principles for achieving them. Proven elements such as the integrated risk management approach will be further pursued and developed.

Our goal is to continue adequately protecting society and the economy against natural hazards. To this end, we must not only become more resistant. We must also be capable of rapidly regaining functional capacity after an event, as well as being prepared and capable of adapting to changed boundary conditions. Achieving these goals necessitates individual responsibility at every level and co-operation between all actors.

A comprehensive, broad-based assessment of Switzerland's position was compiled in the 2016 report "Management of Natural Hazards in Switzerland", which incorporates all actors' viewpoints in identifying measures that will substantially contribute to implementation of the updated strategy 2018. For this reason, no additional action plan is needed for implementing the strategy 2018. However, PLANAT does recommend priorities for achieving the objectives formulated in the strategy and identifies the actors concerned.

The strategy 2018 is directed at all whose activities and decisions influence the management of risks from natural hazards. In its present form it was taken note of by the Federal Council on July 4th 2018.

By implementing this strategy, Switzerland will secure its living and economic environment for the long term and strengthen national competitiveness.

A handwritten signature in black ink, appearing to read 'hi' or a stylized 'B. Spicher'.

Bruno Spicher, President of PLANAT



Introduction

Recent loss events abundantly demonstrate the threat from gravitational, seismic, climate and meteorological hazards to persons, material assets and the environment in Switzerland.

The frequency and intensity of events are likely to increase as a consequence of climate change. Natural phenomena such as drought and heat waves have drawn scant attention so far, but could increasingly affect Switzerland in the future. In addition, earthquakes in Switzerland are an underestimated natural hazard. Meanwhile, population figures, utilisation and interconnectedness of Switzerland's living and economic environment are all on the rise. That in turn heightens the level of risk if developments are not monitored, evaluated and controlled in an aware and forward-thinking manner.

Switzerland provides adequate security against natural hazards

There is no such thing as absolute security. However, losses resulting from natural events must be socially and economically acceptable. Risk-conscious thinking and action are needed to establish adequate security, to maintain that security over the long term, and to make optimum use of available resources.

For adequate security, Switzerland must be resilient, which entails being resistant and capable of recovering and adapting. Everyone makes their contribution to security and ensuring that it is maintained.

Switzerland sets the risks from natural hazards in overall context and prepares itself so as to absorb their potential damage and adverse effects. Society and the economy should rapidly regain full functional capacity following an event. Monitoring the development of hazards and risks and learning from events all contribute to adaptability. Switzerland has set itself the following goals for mitigating the potential consequences of natural events:

- **Switzerland is resistant.** The effects of natural events are acceptable both to society and the economy.
- **Switzerland is able to recover.** Society and the economy are capable of rapidly regaining functional capacity following natural events.
- **Switzerland is able to adapt.** Society and the economy adapt themselves in timely fashion to changes in boundary conditions.

Society and the economy may suffer major repercussions from a natural event that affects not only persons, buildings and cultural goods but also natural resources essential to livelihoods, infrastructure and objects of considerable economic relevance or scope. For this reason, PLANAT in 2013 issued recommended levels of security for these protected objects. Not only do goods have economic importance, so do services. Essential goods and services need identifying at distinct local, regional and national levels, since a given item of goods or a service does not necessarily have the same importance everywhere.

The greater the awareness and competence with which risks are managed, the more resistant Switzerland is, and capable of recovering and adapting. All actors, as an expression of their responsibility to society, must make their respective contributions to preventing losses and reducing risks. Society accepts and bears the residual risks in a spirit of solidarity. Assurance is needed that solidarity will be maintained, and that there will be a balance between solidarity and individual responsibility.

Being resistant entails reducing losses from hazardous natural events to an acceptable level by implementing and adapting appropriate measures.

Avoidance of new risks, reduction of existing risks through preventive measures, intervention during hazardous natural events: all of this is designed to ensure the acceptability of potential damage caused. We strengthen our resistance by ...

- **Avoiding hazards:** Facilities are preferably planned in low-hazard areas. Buildings and infrastructure are put in place and utilised risk-consciously. Persons practice risk-conscious behaviour both before and during events.
- **Providing adequate protection:** The frequency, intensity and impacts of natural processes are reduced by measures to protect persons and natural resources essential to livelihood; vulnerability of buildings and facilities is reduced by virtue of their construction, or by putting protective measures in place.
- **Providing redundancies where necessary:** Parallel systems ensure that key goods and services are not entirely disrupted in result of a natural event.

Resistance is primarily determined by an optimal combination of coordinated measures. Hence to preserve resistance, all measures must be regularly checked for reliability, maintained and overhauled where necessary.

Since there is no such thing as absolute security, it would be wrong to focus solely on resistance. There needs to be a balance between efforts to achieve adequate resistance and a high capability to recover after an event.



Ability to recover entails having capability to surmount the negative impacts of natural events in order for society and the economy to rapidly regain functional capacity.

Preparation for possible events aims to save lives and limit damage, as well as to rapidly establish a minimum level of security after an event so as to regain functional capacity. In order for events to be dealt with rapidly, personnel, financial and technical resources for restoring functionality must stand ready for prompt deployment. We strengthen our ability to recover by ...

- **Preparing ourselves:** Proper preparation is a prerequisite for coping successfully with natural events: the basics are all worked out and known; instruments, organisations and cooperation structures are established, function well and stand ready for deployment.
- **Providing adequate resources:** Personnel resources and technical aids required for coping with an event are defined and known, with regulated competencies in place for their deployment. Provision/procurement and distribution of financial resources for restoring functionality is regularised and secured.
- **Offering mutual assistance:** When natural events occur that exceed the resources of the area affected, assistance is rendered in a spirit of solidarity and in accordance with the principle of subsidiarity.

Ability to recover is determined primarily by organisational precautions, available resources and financial options. The nature and scale of an event must not come as a surprise to the actors responsible. Accordingly, their preparations must also envisage very rare events and various chains of events.

An optimal balance between resistance and capability to recover is a basic prerequisite for security. Situational developments and changes require adjustments to the means of managing risks from natural hazards. Ability to adapt is therefore a further basic prerequisite for long-term preservation of security.



Switzerland is able to adapt

Ability to adapt entails identifying changes and developments well in advance so that society and the economy can prepare for them in good time.

The purpose of monitoring and assessing changes is to identify the need to take adaptive action in good time, and consequently implement the requisite measures. The value and spatial distribution of protected objects, land use, hazards and hence the risks all change over time. The security demands of society and its solidarity change likewise and must be monitored. In addition, ability to adapt requires creating new knowledge, making that knowledge available and exchanging it between the actors. We strengthen our capability to adapt by ...

- **Identifying and reacting to changes:** Developments in natural hazards and risks are monitored and regularly assessed; any need for action identified as a result is addressed in a timely and appropriate manner by all the actors responsible.
- **Creating and deepening knowledge:** Research into the course and consequences of natural hazard processes, the effects of measures and in particular the social and economic impacts of natural events closes identified gaps and anticipates possible future developments.
- **Imparting knowledge:** Findings from research and analysis of events are incorporated into the education and training of experts. Exchange of knowledge between experts, public authorities, private actors and the population is to be encouraged.

Ability to adapt is determined primarily by knowledge and willingness to change. Developments must therefore be identified, monitored and anticipated. Cross-disciplinary and networked philosophies and action are important here.

Switzerland addresses natural hazards with a risk-oriented approach.

Risk-oriented management of natural hazards is the only way to ensure that various risks can be compared and mitigated comparably everywhere, and that the security thus established is preserved over the long term.

Effective and efficient use of resources requires that the potential impacts of various natural hazards in different areas can be compared with each other and set in context with further risks. This is only possible by envisaging both the magnitude and likelihood of possible losses.

The 2004 strategy on protection against natural hazards called for comparable management of risks from natural hazards as a basis for a comparable level of security throughout Switzerland. Comparable management is ensured when the level of security to be achieved for a given case is developed jointly by the actors responsible, in accordance with a uniform procedure. This approach rests on identical principles and a uniform basis. Guidance for the actors responsible comes from the recommended security level (PLANAT 2013, 2015) and from the boundary conditions prevailing in a given case. Developing security in accordance with this uniform procedure entails:

- Identifying the actors (actors responsible, risk carriers, those affected)
- Formulating the actors' objectives and making them generally known to all
- Discussing solution variants and envisaged measures with all actors well in advance and devising an optimised solution
- The actors responsible taking and justifying executive decisions with awareness of the risks and uncertainties involved

The actors' participation ensures an active risk dialogue, which in turn is a prerequisite for the acceptability of the measures and residual risks and hence for defining the level of security that is considered adequate.

In order to achieve the goals of a Switzerland that is resistant and capable of recovering and adapting, management of natural hazards is based on the following proven principles:

- Switzerland practices a comprehensive risk culture.
- Integrated risk management involves all actors.
- Risks from natural hazards are managed in a spirit of solidarity.
- Knowledge of natural hazards and risks is up-to-date and accessible.
- Risk management takes into account all aspects of sustainability.

Switzerland practices a comprehensive risk culture

Switzerland's risk culture is characterised by recognising risks, willingness to improve and maintain security, and conducting an open, transparent dialogue on opportunities and risks.

Every society has conventions prescribing which risks are acceptable and which are to be avoided. There are also conventions determining who is responsible for management of natural hazards, the applicable rules, deployment of resources, and how the residual risks are borne. Natural hazards require managing in a societal, economic and ecological context. The uniform, risk-oriented approach is a medium-term influencer of societal conventions and legal foundations.

Risks from natural hazards are known to all actors:

Reliable and trustworthy information on natural hazards and risks forms the basis for risk awareness and acceptance, along with identifying need for action. The underlying decision-making information for comprehensive risk control must therefore be accessible and understandable by all actors, thus facilitating active exchange and knowledge transfer between the research community, public authorities, society and the economy.

Ongoing risk dialogue is a prerequisite for enduring cooperation:

Risk dialogue entails active and reciprocal exchange of knowledge and experience among the actors, including analysis and constructive handling of uncertainties and errors. This facilitates learning processes and leads to continuous improvement in the mitigation of risks from natural hazards. All actors must address possible conflicts of interest and work constructively towards solutions. The recommended level of security, the implementation or intentional non-implementation of measures must be evaluated considering the overall context.

Decision-making takes into consideration the risks from natural hazards:

Residential developments, building projects and intensive land use represent opportunities for society and the economy, and yet may also increase the risks from natural hazards. Risks and opportunities must therefore be brought into decision-making processes at an early stage. Timely information specific to individual target groups and coupled with participatory processes ensures that decisions are taken and justified with awareness of the actors' concerns. A transparent and regularised approach as well as a broad-based weighing of the relevant aspects strengthens the actors' commitment to implementing and supporting decisions that were jointly made.

Integrated risk management involves all actors

Integrated risk management encompasses the full range of natural hazards. It applies comparable standards for quantifying risks and manages those risks comparably, involving all actors and affected parties. All aspects of sustainability are considered in the weighing of possible measures.

Integrated risk management was postulated by the 2004 strategy on protection against natural hazards. Integrated risk management entails assessing risks holistically and prioritising the need for action. It supplies answers to three questions:

- **What can happen?** Risk analysis is a science-based process; it looks into both the intensity and frequency of natural hazards and the expected consequences and losses.
- **What is allowed to happen?** Evaluation and weighing of risks identifies which risks are acceptable, and which are unacceptable.
- **What has to be done?** Integrated planning of measures weighs risks and opportunities and defines the degree to which risks are to be avoided, reduced or borne.

Uniform, up-to-date hazard and utilisation data are necessary for periodic identification and evaluation of risks from natural hazards. This must also consider future developments, in particular with regard to utilisation. Risk assessments in individual areas are to be combined into overall perspectives. Where infrastructures and objects of considerable economic importance are concerned, increased attention must be paid to the indirect consequences of loss events such as disruption of operations and transportation.



Integrated risk management rests on comprehensive, up-to-date hazard and risk data and requires an open, transparent risk dialogue.

The following points are central to integrated management of natural hazards:

- **Risk identification and assessment:** Risks from all hazardous processes are monitored and periodically assessed.
- **Uniform approach:** The recommended level of security is always developed jointly and in accordance with a uniform procedure.
- **Consideration of boundary conditions:** The recommended level of security is a guide for the actors responsible and for risk carriers, all of whom further take into account both local boundary conditions and the requirements of other areas.
- **Deployment of available courses of action:** All courses of action for improving and maintaining security will be assessed; these include planning, organisational, biological and technical measures. They will be optimally combined within the framework for integrated planning of measures and reviewed in terms of their effects, benefits, costs and reasonableness. Synergies with other tasks and the acceptability of residual risks are further decisive factors in selecting among variants and deciding on their implementation. Measures put in place will be maintained and their effectiveness periodically reviewed.
- **Consideration of uncertainties:** Uncertainties will be identified, quantified as far as possible, communicated and factored into decisions.
- **Weighing of interests and setting priorities:** Decisions on the implementation of measures define the extent to which risks are avoided, reduced or accepted. This requires a weighing of interests and solutions as well as a fact-based justification of decisions, because the overall optimal solution is not necessarily the best solution for each individual aspect.

Integrated risk management not only takes place at the operational management level within the framework of specific projects; it is also the instrument for integrated management of natural hazards at the strategic and normative management levels. At the strategic management level, integrated risk management comprises risk overviews and overall planning for larger areas and longer time scales. At the normative management level, the various actors responsible define coordinated goals, principles, norms, laws and ground rules for managing risks from natural hazards.

Risks from natural hazards are managed in a spirit of solidarity

Natural hazards can affect everyone in Switzerland – which is why everyone must be involved with managing them.

Every person and institution bears risks from natural hazards – both for themselves and for society. In addition, everyone has influence over the risks through their actions and behaviour. That makes everyone an actor responsible for the management of natural hazards – albeit in different roles.

- **Persons and businesses** independently contribute to avoiding, reducing and accepting risks, and ensure that any residual risks are acceptable.
- **Society** assumes solidarity in bearing risks whose avoidance or reduction would entail disproportionate individual or public investment.
- **The insurance sector** helps to finance reconstruction and supports the insured with prevention services.
- Planning and investments by **public authorities, organisations and emergency services** contribute greatly to reducing risks. Federal government has a leading strategic role here, providing financial and technical support to the cantons. The cantons, municipalities and organisations develop the technical base, plan and implement measures.
- **Policymakers** at all levels are responsible for regulation and the provision of public funding for integrated risk management.
- **Planners and engineers** point out risks and propose appropriate solutions as part of their obligation to exercise diligence.
- **The research community, education and training institutions** create new knowledge and disseminate it in the field.
- **Professional associations** see to strengthening cooperation between the actors and giving their backing to quality standards.

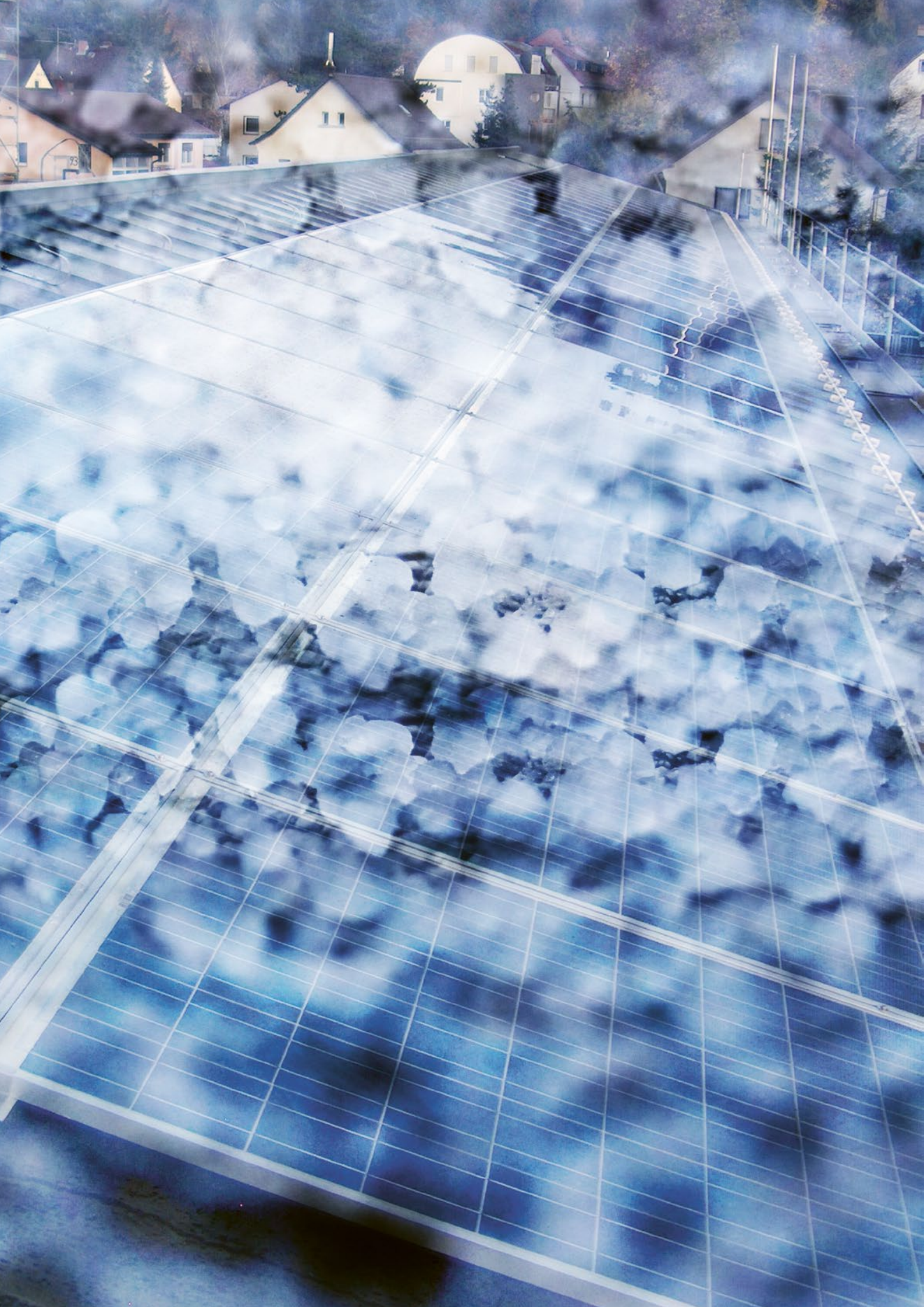
Management of natural hazards is frequently a joint task and requires the cooperation of various actors. Coordinated and institutionalised cooperation, open exchange and transparency strengthen capability for action. They enable the use of synergies and ensure that resources are optimally and sustainably used. In accordance with the principle of subsidiarity, society at large steps in to assist when individual stakeholders have insufficient resources.

Knowledge of natural hazards and risks is up-to-date and accessible

Sound scientific principles and their implementation as practical information form the basis for competent management of natural hazards.

Understanding about natural hazards has improved significantly in recent decades. However, it must be systematically further developed and expanded in terms of risk perception, management and reduction. This requires not only technical and scientific expertise, but also social and economic competencies and increased interdisciplinary and transdisciplinary research.

Research addresses society's specific concerns. Research and practice identify knowledge gaps. New research findings will be made available for practical use and practical experience will also be incorporated into research, while education and training are geared to practical needs and various actors coordinate the raising of awareness among the population at large.



Risk management takes into account all aspects of sustainability

The goal is to achieve a recommended level of security that is ecologically tenable, economically reasonable and acceptable to society.

Sustainable development meets present needs without compromising the choices of future generations. The effects of measures must therefore be assessed at an early stage, with conflicts of interest transparently presented and weighed up. This will achieve good solutions that also benefit future generations. As a rule, organisational measures restrict future scope for manoeuvre less than, for example, technical and structural measures.

Effective, efficient use of private and public resources is the goal

Managing natural hazards ties up considerable resources. Therefore, the goal is to achieve an optimal balance between security requirements and the acceptability of residual risks.

- **Effective action means setting risk-oriented priorities.** This requires long-term overall planning that identifies developing risks and the need for action, and enables transparent prioritisation. Also required is cooperation from all actors, a comparable basis and a uniform procedure for quantifying and evaluating risks.
- **Efficient action means achieving the optimum.** The risk-oriented approach is already a broadly applied standard in integrated planning of measures. Methods are available for quantitative identification of risks and for assessing the cost-benefit ratio of risk countermeasures. In addition, the planning process takes into account all aspects of sustainability for optimisation of measures and their effects.

Not allowing risks to arise in the first place costs less than reducing them after the fact. Such a stipulation would, however, block any development opportunities. Therefore, it is important to be shrewd about risk management and control. Systematically risk-oriented spatial planning and construction appropriate to prevailing natural hazards together afford sustainable control over the development of risks. These are prerequisites for maintaining the achieved security level and for long-term avoidance of new, unacceptable risks.

Switzerland sets priorities for managing natural hazards

Risk management is an ongoing endeavour that requires resources and prioritising.

From PLANAT's perspective, the following priorities need to be set in order to achieve the objectives of the "Management of risks from natural hazards" strategy.

- **Establish comparable risk management:** The procedure for developing adequate security in a given case must be introduced and systematically established everywhere. Structuring this procedure presents a major challenge, yet here is also an opportunity for risk dialogue and for workable, sustainable solutions. Inclusion of actors responsible and in particular the risk carriers is a prerequisite for acceptability of residual risks and hence for the definition of adequate security.
This in particular addresses public authorities.
- **Establish integrated risk management at all levels:** Integrated management of natural hazards must be established at all management levels, particularly the strategic and the normative. That requires implementation of far-sighted risk monitoring across all areas of responsibility, also taking into account systemic risks and indirect consequences of loss events.
This in particular addresses public authorities, the insurance sector, planners and engineers.
- **Avoid unacceptable new risks:** Systematically risk-oriented spatial planning and construction appropriate to natural hazards are necessary to sustainably manage the development of risks and to avoid unacceptable new risks.
This in particular addresses public authorities, planners and engineers.
- **Clarify responsibilities:** Managing risks from natural hazards is a joint task concerning numerous actors, all of whom must have clearly defined responsibilities. Responsibility, knowledge and resources need to be well-balanced. Where necessary, responsibilities must be enshrined in law.
This in particular addresses public authorities and the insurance sector.
- **Create awareness of responsibility:** All actors are empowered to contribute to the recommended level of security in their own respective ways. They can thus act competently with regard to risk, aware of how their responsibility meshes with solidarity across society.
This in particular addresses public authorities, organisations, the insurance sector, planners and engineers.

- **Expand and exchange knowledge:** Research into the effects of natural hazards, risk perception and risk management must be intensified and carried out in a transdisciplinary manner. There must be an active exchange of knowledge between all actors.
This in particular addresses the research community, education and training institutions, the insurance sector and public authorities.
- **Foster solidarity:** Society must grow more competent regarding risk. Everyone must be willing to act in solidarity, accept risks, and also be aware of and assume their own individual responsibility. The actors must be sensitised to the interrelationship between individual responsibility and solidarity.
This in particular addresses policymakers, the insurance sector and society at large.

No separate action plan is needed for implementing the strategy 2018. “Management of Natural Hazards”, a broad-based report published in 2016 (Federal Council report in fulfilment of former National Councillor Darbellay’s postulate 12.4271) outlines the measures necessary from all actors’ points of view. Together with the priorities recommended by PLANAT, these measures contribute substantially to implementation of the strategy.

With the “Management of risks from natural hazards” strategy implemented, Switzerland’s living and economic environment will be adequately protected against the effects of natural hazards both in the present and through times to come. A uniform procedure involving the actors responsible and risk carriers ensures sustainable use of available resources. Coordinated regulations and well-functioning management structures are a prerequisite for fulfilling this joint task.

Looking ahead, integrated management of natural hazards must be further developed and systematically aligned with a Switzerland that is resistant and capable of recovery and adaptation. Risk control is central to future development. Systematically risk-oriented spatial planning and land use together with construction appropriate to prevailing natural hazards afford sustainable control over the development of risks. They are a prerequisite for maintaining the achieved security level and for long-term avoidance of new, unacceptable risks.

Related strategies and further literature

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