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Management of Risks from Natural Hazards
Strategy 2018

We are a society that is competent in dealing with risks - we are aware and we manage risks from natural hazards in a conscious and forward-looking manner.

Table of Contents

Preface

A secure setting in which to live and do business is a prerequisite for prosperity and quality of life. However, 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. This 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 strategy "Protection against Natural Hazards" in 2003 and set a further milestone in 2005 by adopting an action plan to push forward its implementation. This initiated a transition from a purely hazard-based response to a comprehensive risk culture with 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 increasing the risks from natural hazards. At the same time, resources for managing natural hazards are limited. Recognition of this led to ratification of the framework agreements Hyogo 2005 and Sendai 2015 at international level. In Sendai, the international community adopted seven global targets and four priorities for action to reduce disaster risks. However, Switzerland has seen changes in its national situation since the strategy "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 management of risks from natural hazards. This has seen advances since 2003 in response to experience gained from natural events such as the floods of 2005.

With these considerations in mind, PLANAT has updated its strategy "Protection against Natural Hazards". 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 continue to be pursued and developed.

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

A comprehensive, broad-based assessment of Switzerland's position was compiled in the 2016 report "Management of Natural Hazards in Switzerland", which incorporates all stakeholder 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 recommends priorities for achieving the objectives formulated in the strategy and identifies the stakeholders 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.

Bruno Spicher, President of PLANAT

Recent loss events abundantly demonstrate the threat from gravitational, seismic, climate, and meteorological hazards to people, 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 little attention so far, but might increasingly affect Switzerland in the future. In addition, earthquakes in Switzerland are an underestimated natural hazard. Meanwhile, population figures as well as utilisation and interconnectedness of Switzerland's living and economic environment are all on the rise. This in turn increases 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, damage resulting from natural events must be socially and economically acceptable. Risk-conscious thinking and action are needed to establish adequate security and to maintain that security over the long term.

For adequate security, Switzerland must be resistant and capable of recovering and adapting. Everyone in Switzerland must contribute to this security and to ensuring it is maintained.

Switzerland sets the risks from natural hazards in overall context and prepares itself to absorb potential damage and adverse effects. Society and the economy should rapidly regain functional capacity following an event. Monitoring of the development of hazards and risks and lessons learned from events 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 bearable by both 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 in a timely manner to changes in conditions.

Society and the economy may suffer major repercussions from a natural event that affects not only people, buildings, and cultural heritage but also natural resources essential to livelihoods, infrastructure, and objects of considerable economic relevance or scope. For this reason, PLANAT recommended levels of security for the protection of these objects in 2013. Goods as well as services have economic importance. Essential goods and services need to be identified at distinct local, regional, and national levels, since they will not always be attributed with the same level of importance.

With greater awareness and competent management of risks, Switzerland will be more resistant and capable of recovering and adapting. All stakeholders, as an expression of their responsibility to society, must make their respective contributions to preventing damages and reducing risks. Society must accept and bear the residual risks in a spirit of solidarity. Solidarity needs to be maintained and there must be a balance between solidarity and individual responsibility.

Being resistant means reducing damage from hazardous natural events to a tolerable level.

Avoidance of new risks, reduction of existing risks through preventive measures, and intervention during hazardous natural events: all of this is designed to ensure that the potential damage can be tolerated. We strengthen our resistance by …

- **Avoiding hazards:** Land usage is preferably planned in low-hazard areas. Buildings and infrastructure are put in place and utilised risk-consciously. Hazard awareness and risk-conscious behaviour is practiced both before and during events.
- **Providing adequate protection:** The frequency, intensity, and impacts of natural processes are reduced by measures to protect people and natural resources essential to livelihood; vulnerability of buildings and facilities is reduced through appropriate design and 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 the result of a natural event.

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

Since there is no such thing as absolute security, it is not advisable 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 means 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 safety 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 worked out and known; instruments, organisations, and cooperation structures are established, well-practiced, 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 are regularised and assured.
- **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 stakeholders responsible. Accordingly, their preparations must also anticipate 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.

Ability to adapt means identifying changes and developments well in advance so that society and the economy can prepare for them in a timely manner.

The purpose of monitoring and assessing changes is to identify the need to take adaptive action in a timely manner, and consequently implement the necessary measures. The value and spatial distribution of objects to be protected, land use, hazards and, therefore, the risks, change over time. The security demands of society and its solidarity also change and must be monitored. In addition, ability to adapt requires the creation of new knowledge, its dissemination, and its exchange between stakeholders. 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 responsible stakeholders.
- **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 stakeholders, and the general population is to be encouraged.

Ability to adapt is primarily determined by knowledge and willingness to change. Developments must therefore be identified, monitored, and anticipated. It is important that thinking and actions are cross-disciplinary and networked.

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 comparably managed 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 and set in context with further risks. This is only possible through anticipation of both the magnitude and likelihood of possible damage.

The strategy "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 those responsible, in accordance with a uniform procedure. This approach relies on identical principles and a uniform basis. Guidance for those responsible comes from the recommended security level (PLANAT, 2013, Eckhardt et al., 2015) and from the conditions prevailing in a given case. Developing security in accordance with this uniform procedure means:

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

Stakeholder participation ensures an active risk dialogue, which in turn is a prerequisite for the acceptability of the measures and residual risks and for defining an adequate level of security.

In order to achieve the goals of a Switzerland 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 everyone.
- 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's risk culture is characterised by the recognition of risks, a willingness to improve and maintain security, and open, transparent dialogue on opportunities and risks.

Every society has conventions prescribing acceptable risks and those 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 must be managed 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 stakeholders:** Reliable and trustworthy information on natural hazards and risks forms the basis for risk awareness and acceptance, along with identification of the need for action. The underlying decision-making information for comprehensive risk control must therefore be accessible and understandable by all stakeholders. This facilitates 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 means active and reciprocal exchange of knowledge and experience among stakeholders, including analysis and constructive handling of uncertainties and errors. This enables learning processes and leads to continuous improvement in dealing with risks from natural hazards. All stakeholders must address possible conflicts of interest and work constructively towards solutions. The aimed for level of security and the implementation or intentional non-implementation of measures must be evaluated with consideration of the overall context.

– **Decision-making takes into consideration the risks from natural hazards:** Settlement development, building projects, and intensive land use represent opportunities for society and the economy, yet may also increase the risks from natural hazards. Consideration of risks and opportunities must, therefore, be included in decision-making processes from an early stage. Timely information specific to individual target groups and participatory processes ensure that decisions are taken and justified with awareness of stakeholder concerns. A transparent and regularised approach as well as a broad-based weighing of the relevant aspects strengthen the stakeholder commitment to implementing and supporting jointly made decisions.

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

Integrated risk management was postulated by the strategy "Protection against Natural Hazards". Integrated risk management means assessing risks holistically and prioritising the need for action. It supplies answers to three questions:

- **What can happen?** Risk assessment is a science-based process; it looks into both the intensity and frequency of natural hazards and the expected consequences and damages.
- **What is allowed to happen?** Evaluation identifies acceptable and unacceptable risks.
- **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.

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

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

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

- **Risk assessment and evaluation:** Risks from all hazardous processes are monitored and periodically evaluated.
- **Uniform approach:** The aimed for level of security is always developed jointly and in accordance with a uniform procedure.
- **Consideration of conditions:** The recommended level of security is a guide for those responsible and for risk carriers. They must additionally take into account both local conditions and the requirements of other sectors.
- **Deployment of available courses of action:** All courses of action for improving and maintaining security will be evaluated, including 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 proportionality. Synergies with other tasks and the bearability of residual risks are additional decisive factors in the selection and implementation of variants. 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, those 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 so everybody must be involved in dealing with them.

Every person and institution bears risks from natural hazards – both for themselves and for society. In addition, everyone influences the risks through their actions and behaviour. This means everyone is a stakeholder responsible for dealing with natural hazards – albeit in different roles.

- **Individuals and businesses** independently contribute to avoiding, reducing, and accepting risks. They ensure that any residual risks are acceptable.
- **Society** assumes solidarity in bearing risks, the avoidance or reduction of which would result in disproportionate individual or public investment.
- **The insurance sector** helps to finance reconstruction and supports the insured with prevention services.
- **Public authorities, organisations, and emergency services** contribute greatly to reducing risks through their planning and investment. Federal government has a leading strategic role, providing financial and technical support to the cantons. The cantons, municipalities, and organisations develop the fundamentals and 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** highlight risks and propose appropriate solutions as part of their obligation to exercise diligence.
- **The research community and education and training institutions** create new knowledge and disseminate it for practical use.
- **Professional associations** strengthen cooperation between stakeholders and ensure acceptance of quality standards.

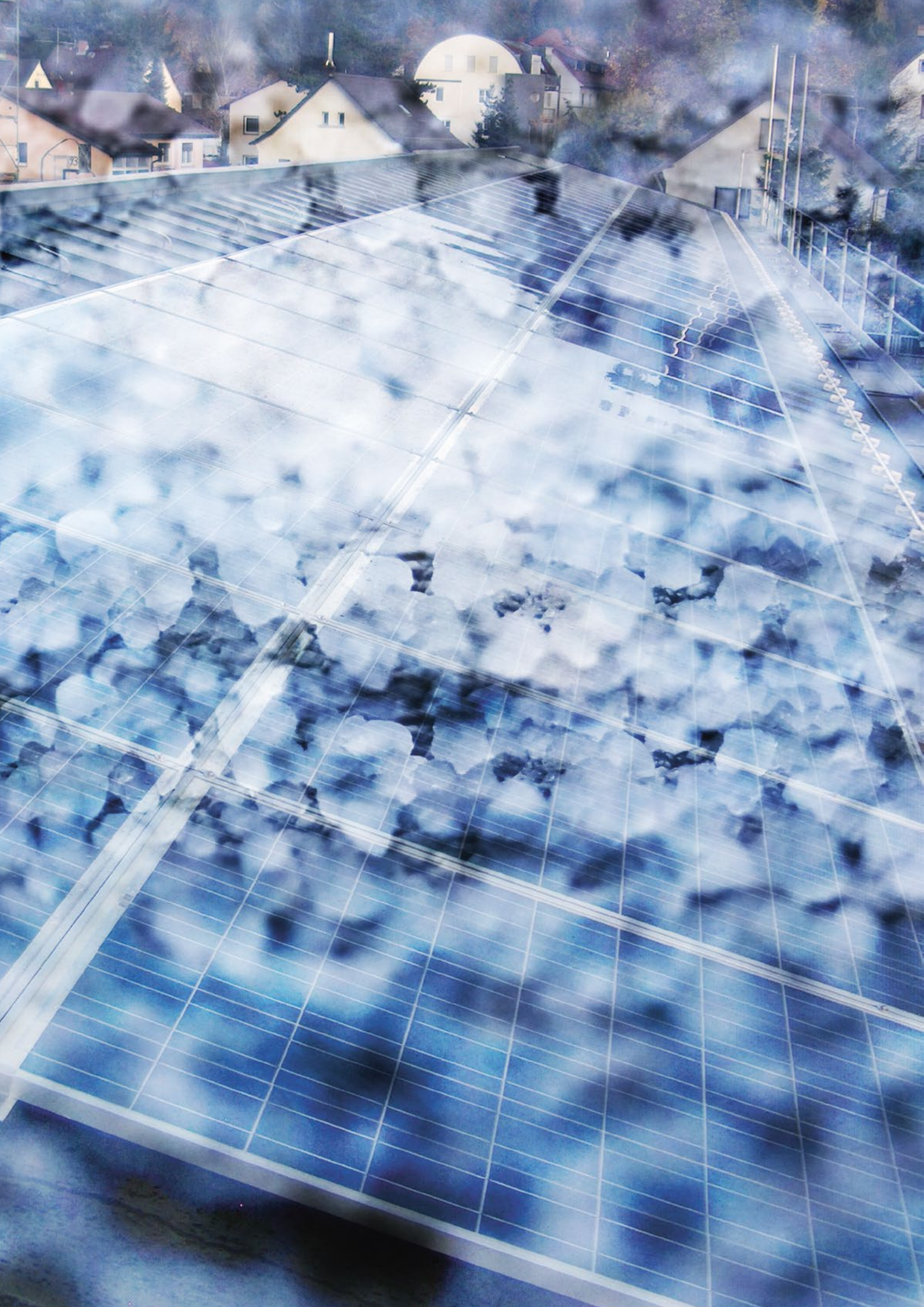
Management of natural hazards is frequently a joint task and requires the cooperation of various stakeholders. Coordinated and institutionalised cooperation, open exchange, and transparency strengthen capability for action. They enable the use of synergies and ensure that resources are optimally and sustainably used. In accordance with the principle of subsidiarity, the community 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 of natural hazards has improved significantly in recent decades. However, it must be systematically further developed and expanded in terms of risk perception and risk management. 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. Education and training will be geared towards consideration of practical needs, and the various stakeholders will 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 level of security that is ecologically tenable, economically reasonable, and socially acceptable.

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 solutions that will also benefit future generations. As a rule, organisational measures restrict future scope for manoeuvre less than, for example, technical and structural measures.

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

- **Effective action means setting risk-oriented priorities.** This requires long-term overall planning that identifies risk development and the need for action, and enables transparent prioritisation. Also required is the cooperation of all stakeholders, 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 development opportunities. Therefore, it is important to consciously manage risks. Systematically risk-oriented spatial planning and construction appropriate to natural hazards ensure 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.

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 strategy "Management of Risks from Natural Hazards".

- **Implement comparable processes for dealing with risk:** The procedure for developing adequate security in a given case must be introduced everywhere and universally established. Structuring this procedure presents a major challenge, yet it is also an opportunity for risk dialogue and for workable, sustainable solutions. Inclusion of those responsible and in particular the risk carriers is a prerequisite for acceptability of residual risks and for the definition of adequate security.
  This is of particular relevance to public authorities.
- **Implement integrated risk management at all levels:** Integrated management of natural hazards must be established at all management levels, particularly the strategic and the normative. This requires implementation of forward-looking risk monitoring across all areas of responsibility, and consideration of systemic risks and indirect consequences of events.
  This is of particular relevance to 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 is of particular relevance to public authorities, planners, and engineers.
- **Clarify responsibilities:** Dealing with risks from natural hazards is a joint task concerning numerous stakeholders, all of whom must have clearly defined responsibilities. Responsibility, knowledge, and resources need to be well-balanced. Where necessary, responsibilities must be embedded in law.
  This is of particular relevance to public authorities and the insurance sector.
- **Create awareness of responsibility:** All stakeholders are empowered to contribute to the aimed for level of security within their own areas of responsibility. They will then be able to act competently with regard to risk, and be aware of how their responsibility meshes with solidarity across society.
  This is of particular relevance to public authorities, organisations, the insurance sector, planners, and engineers.

– **Enhance 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 stakeholders.
  This is of particular relevance to the research community, education and training institutions, the insurance sector, and public authorities.
– **Foster solidarity:** Society must grow more competent in its handling of risk. Everyone must be willing to act in solidarity, accept risks, and be aware of and assume their own individual responsibility. Stakeholders must be aware of the link between individual responsibility and solidarity.
  This is of particular relevance to policymakers, the insurance sector, and society at large.

No separate action plan is required for implementation of the 2018 strategy. "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 stakeholder points of view. Together with the priorities recommended by PLANAT, these measures contribute substantially to implementation of the strategy.

With the strategy "Management of Risks from Natural Hazards" implemented, Switzerland's living and economic environment will be adequately protected against the effects of natural hazards both in the present and in times to come. A uniform procedure involving those 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 provide 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

Strategies influencing the management of risks from natural hazards

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