Pôle Alpin Risques Naturels
Alpine Center for Natural Hazards and Risks Prevention

Integrated Natural Risk Management in the Alpine territories

Tool box for climate change adaptation

Benjamin EINHORN[1], Carine PEISSER[1], Simon GERARD[1]

[1] PARN Pôle Alpin Risques Naturels

Email: benjamin.einhorn@univ-grenoble-alpes.fr / carine.peisser@univ-grenoble-alpes.fr / simon.gerard1@univ-grenoble-alpes.fr

Abstract

The "traditional" vision of natural risk management in France appears to be particularly sectoral and compartmentalized, both from the point of view of management time (prevention, crisis management, feedback, post-crisis recovery, etc.) and from the point of view of the variety of stakeholders involved. This segmentation does not often promote a global and dynamic vision of preventive action (over time) at the scale of a risk basin; and it is therefore responsible for a lack of collective appropriation of management issues.

"Integrated Natural Risk Management" (IRM), understood as a new frame of reference for action and management, favours a global (crisis prevention and management) and territorialized (on the scale of multi-communal living areas) approach to risks that complements their top-down management by the State. Thus, GIRN implies a new mode of extended governance, based on a strong collective involvement of both traditional risk management actors and territorial actors (citizens, economic and tourist operators, associations, etc.) to bring about a Bottom-Up risk management.

To this end, the Alpine Center for Natural Hazards and Risks Prevention (PARN) has been supporting alpine mountain communities since 10 years to better manage risks and adapt to climate change, by co-constructing local strategies for Integrated Natural Risk Management (IRM), broken down into multi-year programs of actions covering all stages of risk management across a territory.

These new approaches were first experimented between 2009 and 2015 on 5 pilot sites, whose actions were capitalized and evaluated in order to identify good practices and promote their transferability to other sites. Their development is being continued as part of the 2014-2020 programming period within the network of the Alpine Territories of Integrated Natural Risk Management (TAGIRN), which currently includes 8 active TAGIRNs and some new candidate territories.

To support these local approaches, the Science-Decision-Action interface network for the prevention of natural risks (SDA) brings together communities of actors, with the aim of initiating research-action projects involving scientists and local actors to develop innovative tools adapted to alpine and local specificities.

Keywords

Natural Hazards – Integrated Naturel Risk Management – Alpine Region – Science-Decision-Action Ntework – Climate adpatation

MEETING FORMAT*

*Select an option (X).

	Regular Poster Presentation
	Young Scientist Poster Presentation
X	Regular Oral Presentation
	Young Scientist Oral Presentation
	Symposia
	Roundtable

AREAS*

Natural hazards		Seismic
		Flooding
		Subsidence
		Hurricanes
		Landslides
		Volcanic eruption
		Wildfire
Technological and manmade hazards		Chemical and petrochemical industry
		Nuclear industry
		New and emergent technologies
		Transportation
		Natech
		Critical infrastructures
		Cyber attacks
		Terrorism
Complex hazard interactions and systemic risks	X	Climate change and its impact
		Natech
		Epidemics / pandemics
		Critical infrastructures

TOPICS*

*Select an option (X)

Learning from experience	X	Organizations, territories and experience feedback
		Expertise and knowledge management
		Weak signals
		Early warning systems
Social and human sciences for risk and disaster management		Human, organizational and societal factors
	X	Risk perception, communication and governance
		Systemic approaches
		Risk and safety culture
	X	Resilience, vulnerability and sustainability: concepts and applications
		History and learning from major accidents and disasters
		Territorial and geographical approaches to major accidents and disasters
		Social and behavioral aspects

Cross-disciplinary challenges for integrated disaster risk management		Compound/cascading disasters (simultaneous and/or co-located) and Mega-disasters
		Connecting observed data and disaster risk management decision-making
	X	Practical applications of Integrated Disaster Risk Management
		Development and disasters
		Build Back Better (than Before)
		Disaster-driven innovation and transformation
		STGs and disaster governance
Complex systems		Complexity Modeling
		System of Systems / Distributed Systems
		Critical Infrastructures
		Probabilistic Networks
Economics and Insurance		Disaster impacts and economic loss estimation
		Cost-benefit approaches
		Insurance and reinsurance
Decision, risk and uncertainty	X	Decision aiding and decision analysis.
		Disaster risk communication
		Ethics.
		Gender
		Responsibility
		Governance, citizen participation and deliberation
		Community engagement and communication
		Scientific evidence-based decision-making, modelling and analytics
		Policy analysis
		Uncertainty and ambiguity
		Multi-criteria decision aid and analysis
	X	Operational research
Artificial intelligence, big data and text data mining		Disaster informatics, big data, etc.
		Deep learning
		Neural networks
		Experts systems
		Text data mining

Engineering Models

	Numerical modelling & functional numerical modeling Formal models / formal proofs
	Model-based approach
	Safe and resilient design and management.

Legislation, standardization and implementation

	Certification and standardization.
	Regulation and legislation.
	Legal issues (scientific expertise, liability, etc.).
	Precautionary principle and risk control and mitigation.

SIGNIFICANCE TO THE FIELD*

*Select an option (X)

X	Demonstrates current theory or practice
	Employs established methods to a new question
	Presents new data
	Presents new analysis
	Presents a new model
	Groundbreaking
	Assesses developments in the field, in one or more countries
	Other (Please specify)

EXPECTED CONTRIBUTIONS*

*Select an option (X)

	Theoretical
X	Applied
	Theoretical and Applied
	Review
	Perspective
	Other (Please specify, e.g. success/failure practices, lessons learned, and other implementation evidence)