



PARATUS Forensic Analysis Approach of Past Disasters to Develop Quantifiable Multi-Hazard Impact Scenarios

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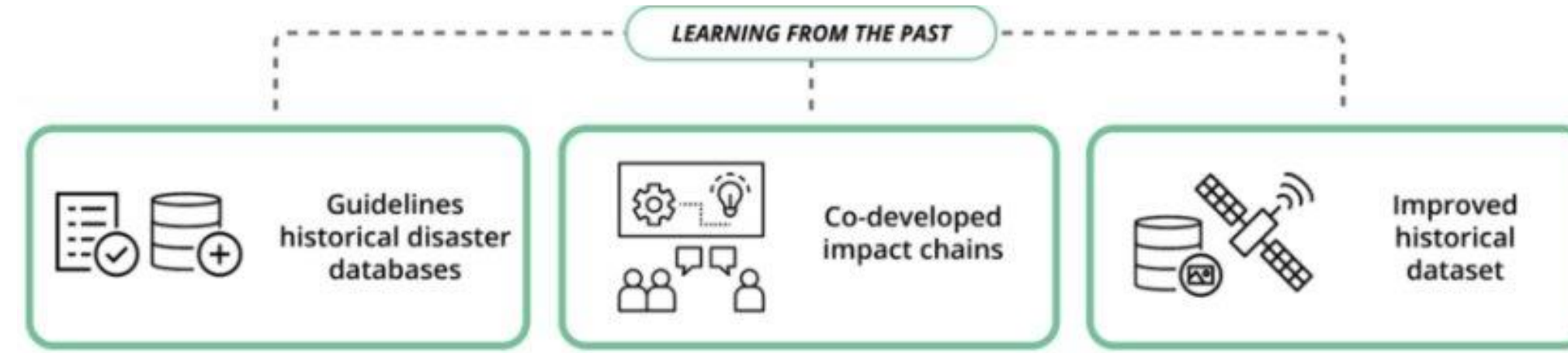
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Pre-Disaster Conditions		
Vulnerability <i>be as specific as possible, mentioning aspects that could be potentially addressed in the future, be as evidence-based as possible</i>	Physical	e.g. lack of irrigation infrastructure, lack of road infrastructure, unprotected buildings etc.
	Environmental	e.g. unfavorable soil conditions, crop highly susceptible to diseases etc.
	Socio-cultural	e.g. limited skills and formal education, preexisting health conditions, employment status, marginalised groups, limited social networks, lack of engagement with local or indigenous communities, low risk awareness, mismatch of traditions and modern DRR-related technologies and policies.
	Economic	e.g. low access to credit, low access to risk insurance, low access to markets
	Institutional	e.g. weak land tenure and access rights, inadequate climate information service, lack of disaster preparedness, lack of coordination etc.
Underlying Risk drivers <i>(namely: socio-economic processes and human-environment relations that affect exposure and/or vulnerability. These processes are not linked with the hazards studied but are process condition intrinsic in society)</i>	Demographic trends	e.g. overpopulation or depopulation, in or out migration, population aging
	Urban and rural land use patterns and processes	e.g. changes in landscape management, strong / rapid urbanization, rural abandonment, land consumption
	Environmental degradation	e.g. deforestation, monoculture, soil erosion, reduction of biodiversity
	Population and social organization: Inequalities & resources distribution	e.g. presence of vulnerable / stigmatized groups, indigenous groups, structural unemployment, poor health coverage, structural inequalities etc.
Identification of root causes	Trends and failures in governance	e.g. lack of decision-making power, lack of trust and recognitions, lack of representativeness, lack of communication among governing bodies
		e.g. colonization and post colonization, heritage, slavery, religion traditions and religion influence on society, racism, militarism & dictatorship, war and post-war fragilities, globalization etc.)

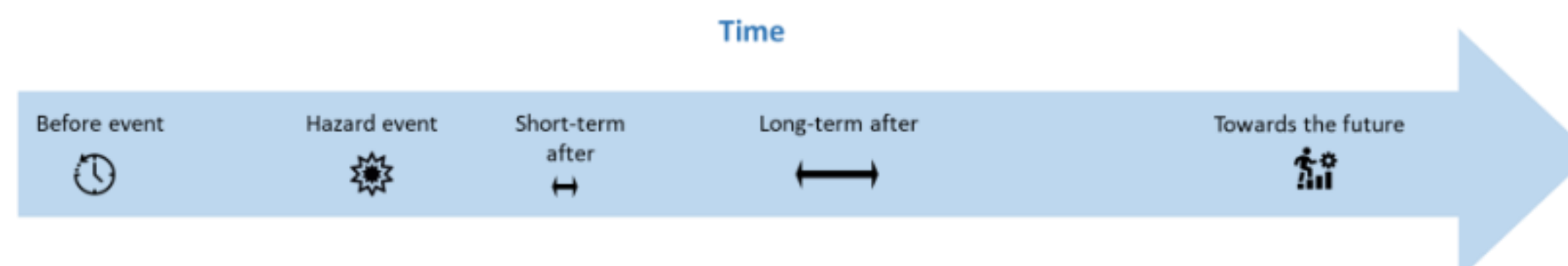
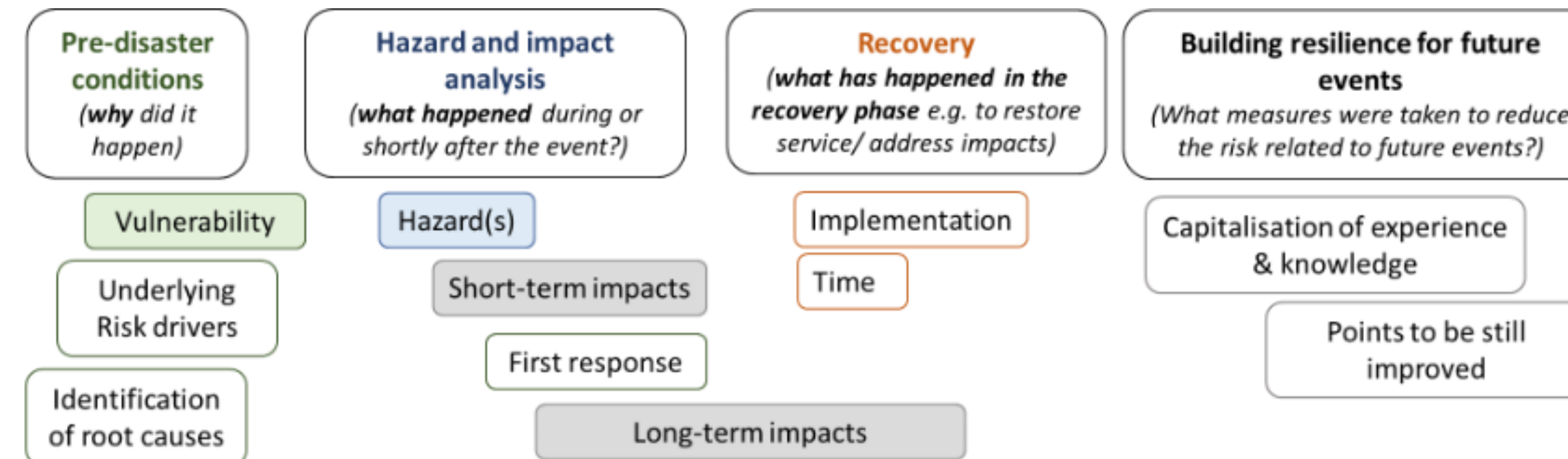
Building resilience for future events		
Capitalisation of experience & knowledge <i>Has this event brought change in risk management for the future?</i>	Adjustments of physical assets	e.g. improvements in construction materials, placement of protection measures
	Creation or changes to strategies and action towards prevention	at institutional level (e.g. updated risk map or civil protection plan, CCA strategy) at community level (e.g. local warning system, community/ family emergency plans)
	Changes in institutional structures in regional, provincial, municipal administration	e.g. creation of institutional figures e.g. climate change officer/unit
	Consequences on social cohesion	e.g. strenghtned social ties, loosening of social networks, and bonds among community members new community volunteer network
	Impact on risk awareness/perception	e.g. of (specific groups of) society, of institutions
Points to be still improved	Role of risk finance	e.g. new insurance scheme developed, dedicated allocation of resources & public budget
	Major unaddressed vulnerability factors	



Understanding complex interactions between hazardous events and dynamic risk conditions in today's geographies requires carefully analyzing the historical data. Learning from the past will contribute to developing models and multi-hazard risk scenarios. Current disaster databases often concentrate on individual hazards and their direct consequences, lacking the ability to attribute impacts resulting from hazard interactions or adequately depict risk pathways from root causes to ensuing losses.

- ✓ Starting from a known end result to understand what happened
- 🔍 Gathering evidence from multiple sources to understand how the failure occurred
- 🔬 Investigation requires interpretation of the collected data
- 🗄️ Data will always be incomplete

In forensic analysis, when examining post-event conditions, the investigator formulates hypotheses regarding the pre-event conditions and gathers relevant evidence and facts. Forensic investigations of disasters, i.e. FORIN, highlight the necessity to characterize systemic, structural root causes and risk drivers at global, national, and local levels. While historical disaster data is indispensable, acknowledging the dynamic nature of economic, social, and environmental conditions, at the same time it challenges the prevailing notion that "the past is the key to the future."



Hazard and impact analysis (what happened?) when describing the aspects in this section address in the text their spatial distribution & time dimension		
Hazard and Short-term impacts They refer to the immediate consequences of a natural event, typically occurring in the days, weeks, and months immediately following the event. They can vary depending on the type of event and should be clarified in the initial scope	Hazard analysis	Description of triggering hazard(s) Description of cascading hazard(s)
	Large-scale (institutional) warning system- both shortly before or during the event, based on the type of hazard	How: means of communication
		What: Message/information delivered
	To whom: who was the audience	
	Typology: description of short-term impacts by sectors	Physical assets Life/ Health Environment Functional/systemic
Economic evaluation of the short-term impacts	The economic losses related to the typology of impacts listed above	
First response (during or shortly after the hazard occurrence)	What & who - what has been done and who has done	Evacuation
		Search & Rescue Other emergency services activated
Long-term impacts originated from direct impacts and can persist for years or even decades. They can vary depending on the type of event.	Typology: description of long-term impacts by sectors	Physical assets
		Life/ Health e.g. psychological impact
		Environment e.g. deforestation, habitat destruction, water contamination, loss of ecosystem services
Economic evaluation of the long-term impacts	Functional/systemic e.g. resettlement Consider the economic losses related to the typology of impacts listed above	

Recovery What has happened in the recovery phase? What was done to restore services / address impacts?		
Implementation <i>The focus is on the execution of the recovery phase, i.e. stakeholders with a leading role, utilized resources and implemented measures during the recovery phase</i>	Available capacities during the recovery phase	e.g. policies, institutional mechanisms, capacity building, technological skills, know-how
	Available financial resources to facilitate recovery (what type, from whom, how much)	e.g. international assistance, bonds, contingency and reserve fund, extra budgetary funds, insurance
	Distribution of resources	e.g. % of resources arrived/used, distribution of resources and activities implemented, responsible body for managing the resources
	Prioritization of sectors and people by needs	Were resources equally distributed or were they allocated to specific sectors/ institution/ groups prioritized in the recovery phase?
Time	Factors that enabled or constrained the use/exploitation of these resources	e.g. cumbersome bureaucracy, lack of human capital
	Time needed for service restored. If multiple services are mentioned please enter multiple rows and define the time needed to restore each service	e.g. transport going fluid again, buildings rebuilt and inhabited

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