Analytics for Decision-making & Preparedness to Catastrophe Events

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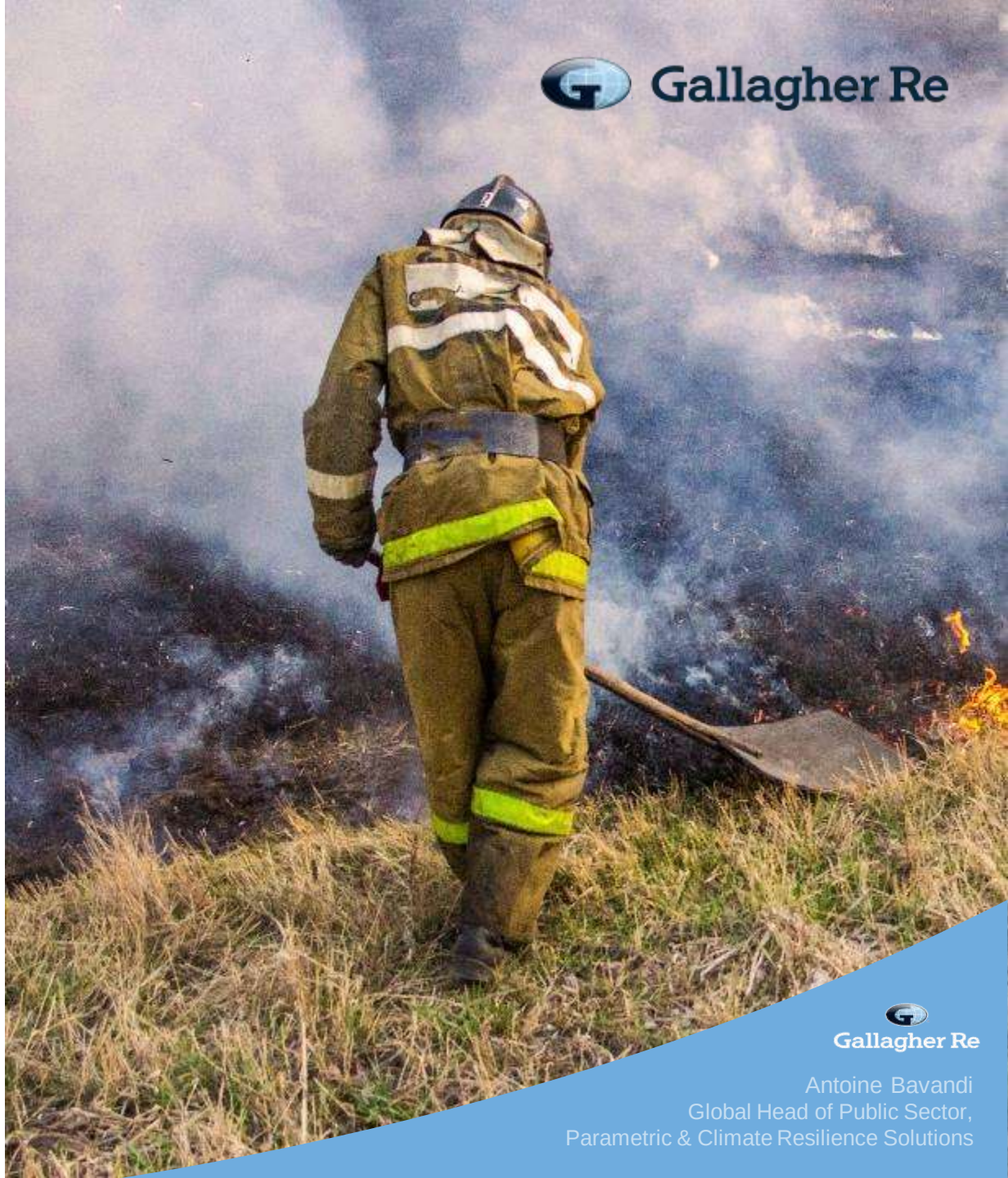
8th International Wildland Fire Conference, 16-19 May 2023

Strengthening Resilience to Wildfire Events

Leveraging Analytics & the Benefits of Holistic Risk Management Strategies

- Understanding Wildfire Impact
- Defining Risk Appetite & Policy
- Designing Optimal Risk Solutions
- Implementation & Execution Plan



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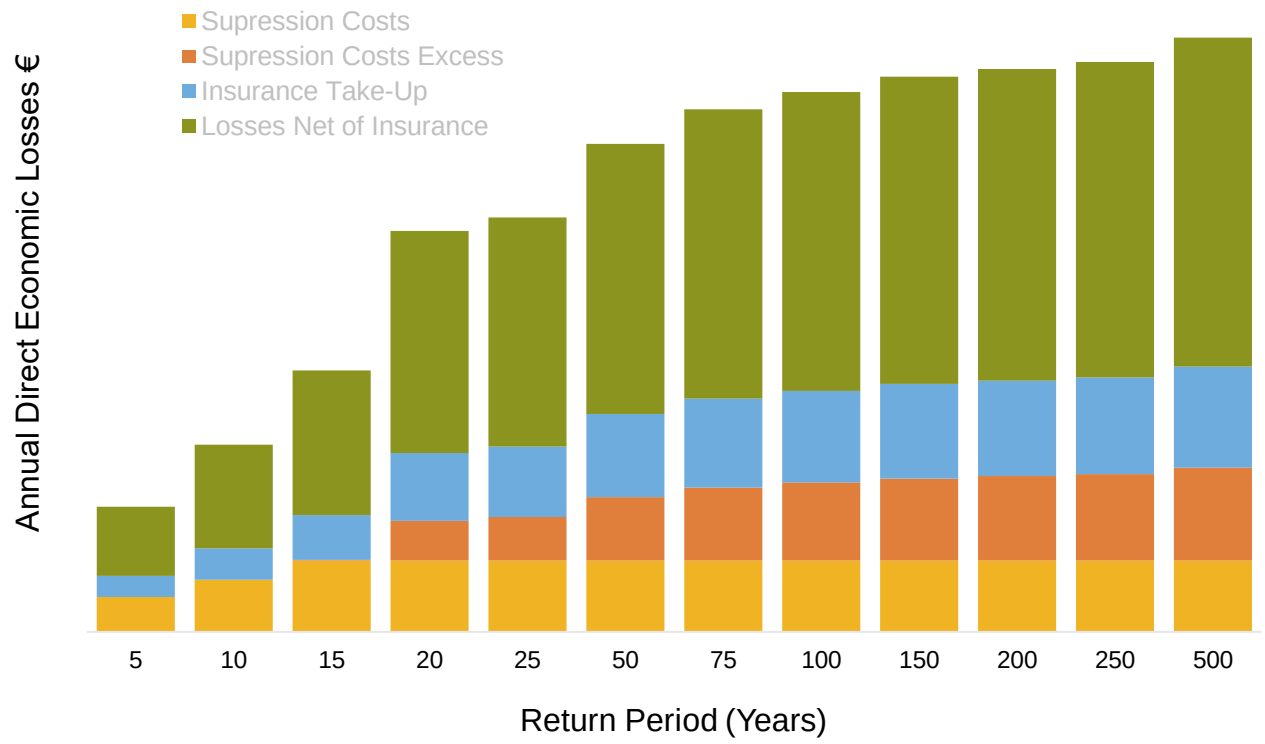
Catastrophe Risk Analytics

Economic Loss Modelling & Validation against Historical Experience

Example of Breakdown Modelled Economic Losses



Historical Footprints 1975-2020

Used database of historical events provided by AGIF for consistency

Land Cover COS2018

Overlaying of footprints with land use to assess WUI and impacts

Costing Model

Costing model by occupancy based on past experience.

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Understanding Wildfire Risk & Potential Impact

Real Economy

Agriculture
- Production losses
- Revenue losses
- Unemployment & loss of productivity

Tourism
- Damage to infrastructure
- Revenue losses
- Unemployment

Other Services & Industry
- Damage to physical assets and capital stock
- Impact on food and commodity prices
- Energy and raw materials production/costs
- Unemployment & revenue losses due to disruption

Macro-Financial Sector

Private Finance
- Firms' profitability, credit risk & financing costs
- Banking sector financial stability

Public Finance
- Fiscal revenue
- Sovereign debt

Indirect Economic Impact
- GDP
- Investment
- Unemployment
- Household Consumption
- Ex/Import balance
- Remittances

Critical Public Infrastructure and Services
- Roads and public transport
- Electricity distribution facilities
- Telecommunications
- Water treatment facilities, irrigation channels and dams
- Schools and hospitals

Intangible Impact
- Livelihoods (e.g., Health, Education, Financial inclusion)
- Firms (e.g., Data, intellectual property, brand, reputation, relationships)
- Government's implicit responsibility

Anticipating the impact of uncertain extreme events on assets & liabilities

Exposure at risk

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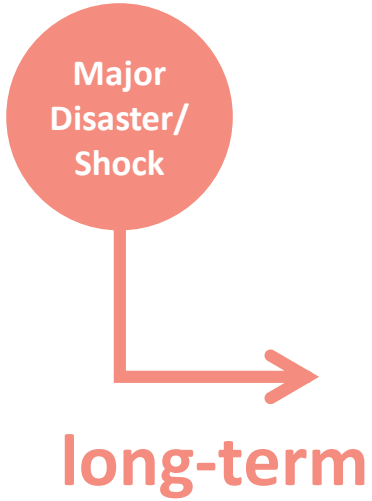

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Actual Impact

spill-over & compounding effects

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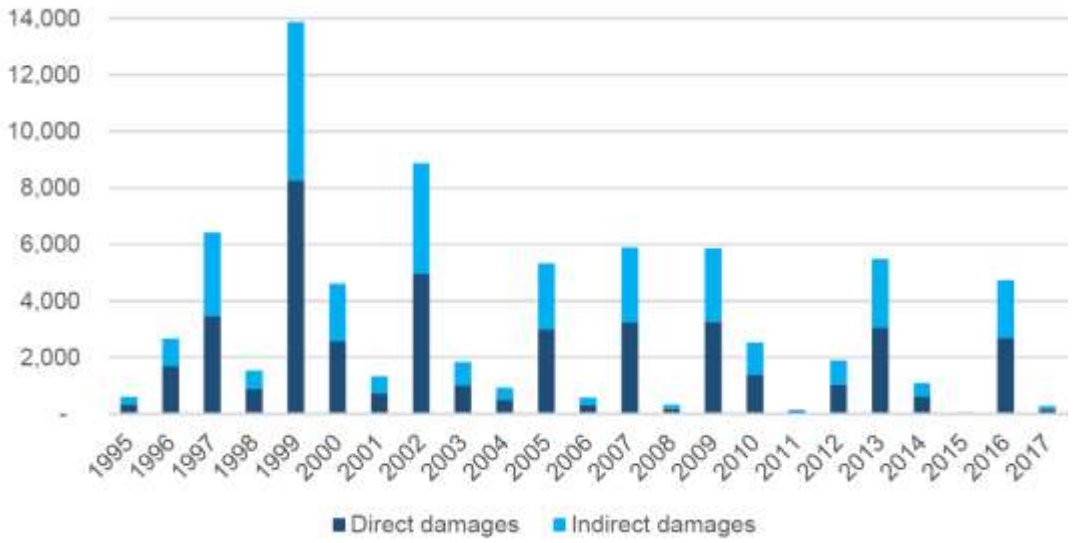
Understanding Wildfire Risk & Potential Impact

Transmission Channels & Indirect Impact



Total direct and indirect economic from natural disasters in Europe

(EUR million, 1995-2017, Source: ESPON/EM-DAT)

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Step-by-Step Implementation

Example of sequence of actions focusing on risk financing element

risk understanding & conceptual design ⟷ *political vision & engagement* ⟷ *technical design & financing* ⟷ *implementing & monitoring*

#1 Comprehensive Stock-Taking of Risks & Exposures

Identifying perils, values at risk, vulnerable assets, available financing & governance

- Exposure Data Collection & Mapping
- Historical loss information
- Holistic Climate & Systemic Risk Analytics
- Assessment of economic and fiscal impact of natural disasters
- Review of Governance & Legal framework
- Review of Financial Instruments in place
- Review of domestic (re)insurance market capacity and maturity
- Financial Gap Analysis
- Deep-dive into specific risk areas
- Benchmark with regional risk and resilience profile

#2 Risk Financing Strategy Design

Laying out vision, objectives, instruments and governance

- Narrowing-down the scope: prioritizing assets, sectors, populations, perils to be protected
- Defining risk appetite, funding needs, short vs long-term objectives, critical beneficiaries
- Identifying new risk financing instruments
- Highlighting role of insurance
- Integrating risk mitigation investments
- Identifying disbursement mechanisms
- Addressing financial inclusion
- Articulating governance structure
- Stakeholder consultation
- Initiating exchange with institutional donors, development, regional partners
- Initiating political and legal actions to allow for anticipated scheme implementation

#3 Scheme Design

Structuring public and private risk financing mechanisms in a fully integrated & complementary set-up

- Developing a layered risk financing structure matching the frequency and severity of expected disaster events along with associated funding needs
- Addressing legal and regulatory aspects
- Formalizing governance, roles and responsibilities across various partners
- Optimizing the use of each source of funding individually as well as in a mutually-enhancing integrated structure
- Designing disbursement mechanism & claims management platform
- Integrating early warning systems and risk mitigation capabilities
- Anticipating other implementation requirements (e.g., insurance modelling, beneficiary registry)
- Capacity transfer and training

#4 Funds Mobilization

Securing public and private finance supporting strategic vision

- Securing and consolidating government's funds for emergency and reconstruction through dedicated channels
- Complying with and applying to premium (co)financing grants from institutional donors and development partners
- Creating funding mechanisms within public finance (e.g., tax) or domestic insurance premiums
- Defining communication strategy

#5 Scheme Operationalization

Implementing risk financing & insurance instruments in a cost-efficient & sustainable manner

- Coordinating preparedness across key public and private stakeholders
- Preparing and securing financial instruments
- Implementing legal texts and decrees allowing for public mechanism effectiveness
- Activating communication campaign

#6 Monitoring & Evaluation

Ensuring efficiency and transparency of scheme over time

- Defining efficiency and performance metrics and measurement tools
- Optimizing risk financing structure through data collection, exposure and risk understanding improvement, and accumulated history
- Demonstrating transparency and efficiency of scheme to stakeholders and partners to maintain long-term sponsorship

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Defining Risk Appetite & Policy

Laying out envelope of events, geographies, beneficiaries to be addressed, in the short and longer term

A **political, technical, financial and operational** process which can be structured into a holistic risk management strategy

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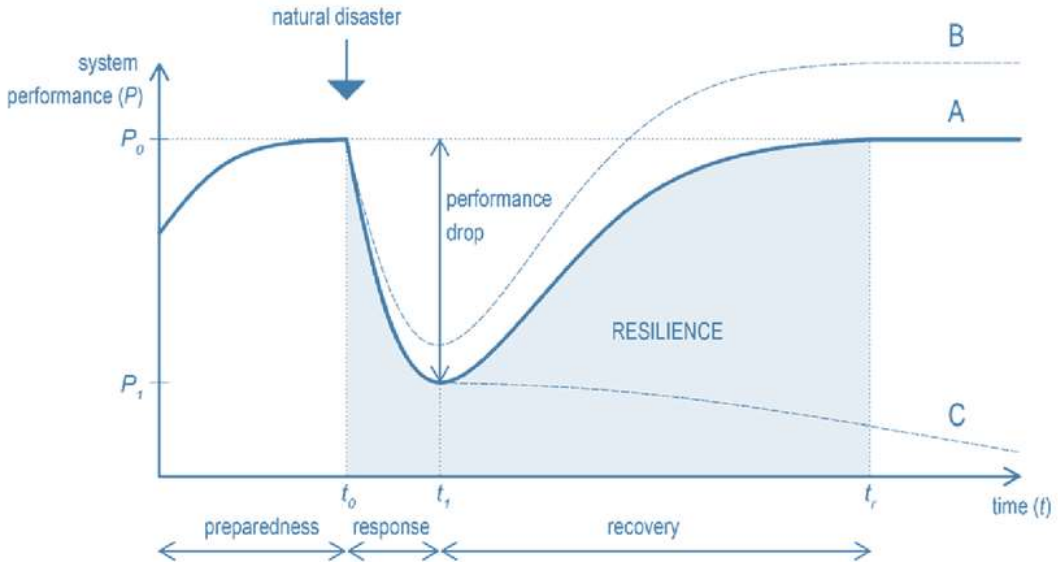
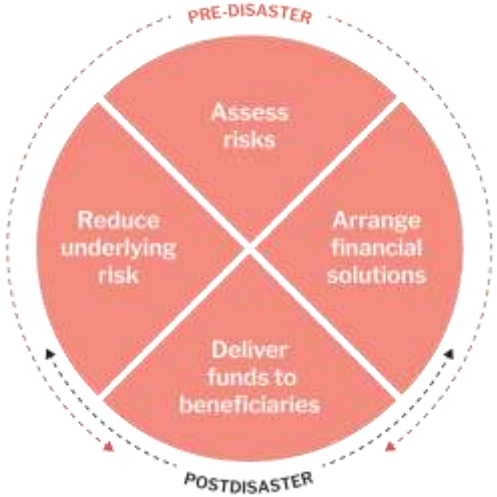
Comprehensive Risk Financing Strategies

Anticipating uncertain extreme events through robust emergency response funding





By mobilizing financing before disasters strike (e.g., insurance schemes), the net impact on governments, businesses and livelihoods is reduced significantly

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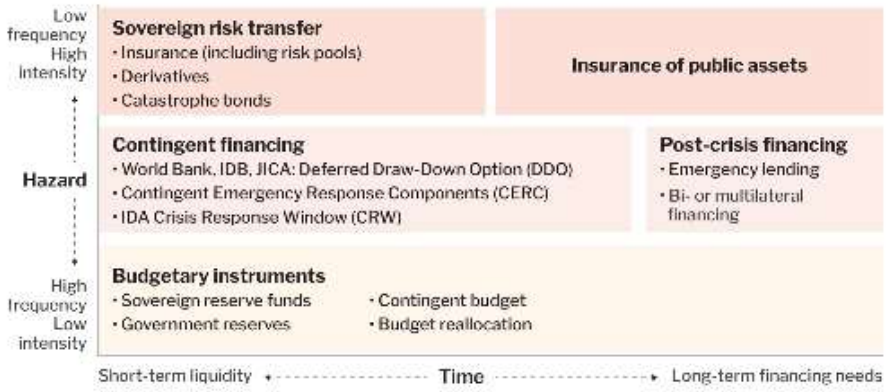
Resilience through public-private partnerships

Leveraging public and private markets' expertise & financing for optimal risk management at scale



Lessons for bringing risk pools to scale

Political commitment is both a precondition for successful catastrophe risk pools and a by-product of collaboration. Pools require strong political commitment from the participating countries as well as development partners' support, especially during the design and preparation stage. The development and implementation of the pools also facilitate regional policy dialogue and improve collaboration between participating countries and development partners.

Sound operational design maximizes impact and generates public goods. Pools can encourage the participating countries to develop pre-agreed disaster response plans to ensure timely, transparent, and efficient use of funds following disasters. The creation of risk pools has also driven the development of public goods such as data infrastructure, risk models, and improved institutional capacity.

Financial sustainability allows catastrophe risk pools to provide access to cost-effective insurance as part of a strategic approach to financial protection. Pools can offer cost-effective insurance solutions in various ways, including through risk diversification, joint reserves and facilitated access to international markets. The benefits of pools can be enhanced by combining different financial instruments to address different needs. The participating countries are encouraged to shift toward proactive risk management by up-front premium payment.

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Adaptation & Resilience:

Multiple Levers to optimise response

Combining risk reduction, mitigation, transfer and climate adaptation investments for most efficient preparedness framework

Combining whole range of risk management solutions
to maximize response to most extreme fire events:

- Advanced Exposure & Vulnerability Mapping
- Wildfire suppression
- Ecological Forestry
- Early Warning System
- Fuel Reduction
- Community-led initiatives
- Private Insurance
- Rapid response mechanisms
- Ex-ante Financing
- Monitoring & Evaluation

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Thank you

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