NATURANCE

Nature for insurance,
insurance for nature

CEN Workshop on Nature-based insurance and investment solutions

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NbS fra norme tecniche, ricerca ebuone pratiche
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nature teaches us to manage risks in regenerative, forward-looking ways

We choose nature because without it, we are nothing.

Nature is the foundation of our well-being, our economies, and our collective resilience.

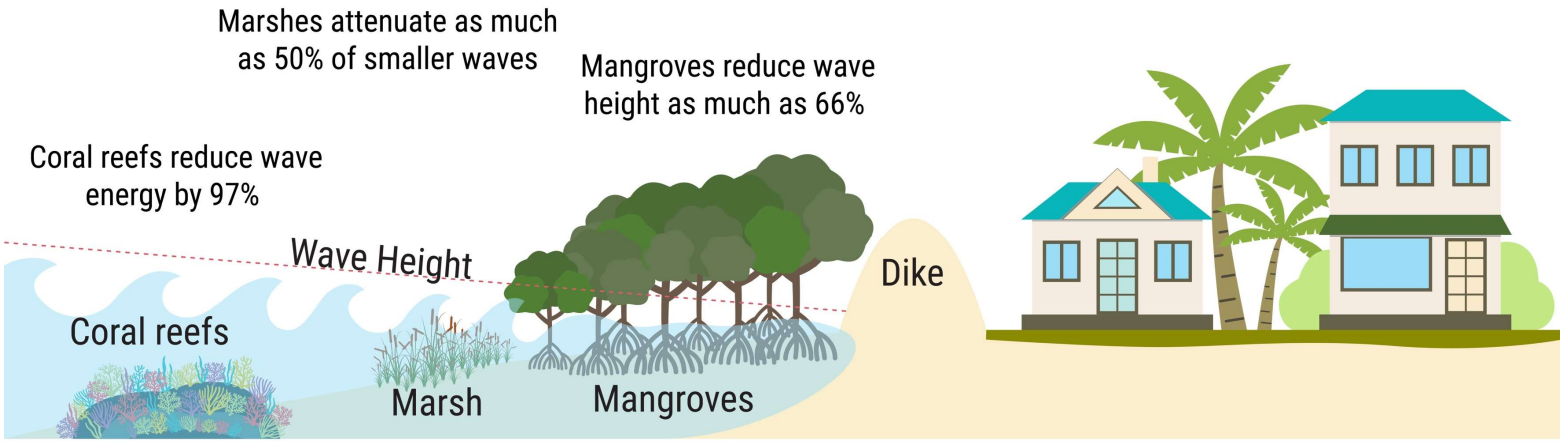
In the face of accelerating climate and environmental risks, nature offers an opportunity to create value, advance equity, and reconnect humanity with the systems that sustain life.

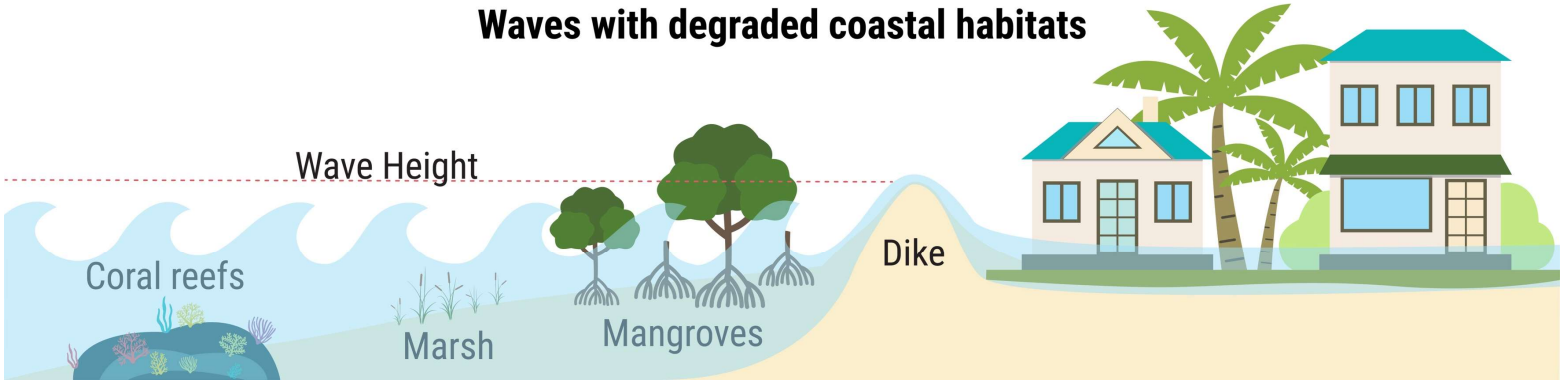
Prioritizing nature restoration teaches us how to design regenerative, adaptive, and future-oriented solutions that manage risk, and support livelihoods and strengthen communities.

Insurance as a source of finance for nature

Ecosystem services like water regulation, air purification, pollination, and climate regulation **have economic value, even if no price is paid** for their provision.

Insurance offers several ways to harness this value for ecosystem protection and restoration.





Greenium

Insurance operates on the premise that a stochastic distribution of losses caused by extreme climate events—or more generally, extreme hazardous events—can, when pooled across many policyholders or events, be translated into predictable rates known as premiums.

If it can be demonstrated that the positive contributions of nature to people help reduce losses—compared to what those losses would have been in the absence of these contributions—then we can refer to this loss reduction as a greenium.

By protecting and restoring ecosystem services that reduce disaster risk, insurance mechanisms can be used to reward investments in nature-based solutions through lower premiums.

NATURANCE has conducted nine Innovation Labs

In the NL, we looked into improved methods to quantify flood risk reduction and co-benefits of NbS.

The Wildfire Lab explored how insurance can incentivize ecosystem restoration.

In the UK, a Lab developed business cases for urban natural flood management aligned with Biodiversity Net Gain requirements.

In Italy, the Lab examined controlled flooding combined with community insurance and NbS.

Nature-based insurance solutions

Enhanced property or indemnity insurance

- restoration clause in payouts
- premium or deductible incentives for restored ecosystem services
- conditional renewal or coverage continuation based on restoration commitments

Ecosystem insurance - nature as the insured asset

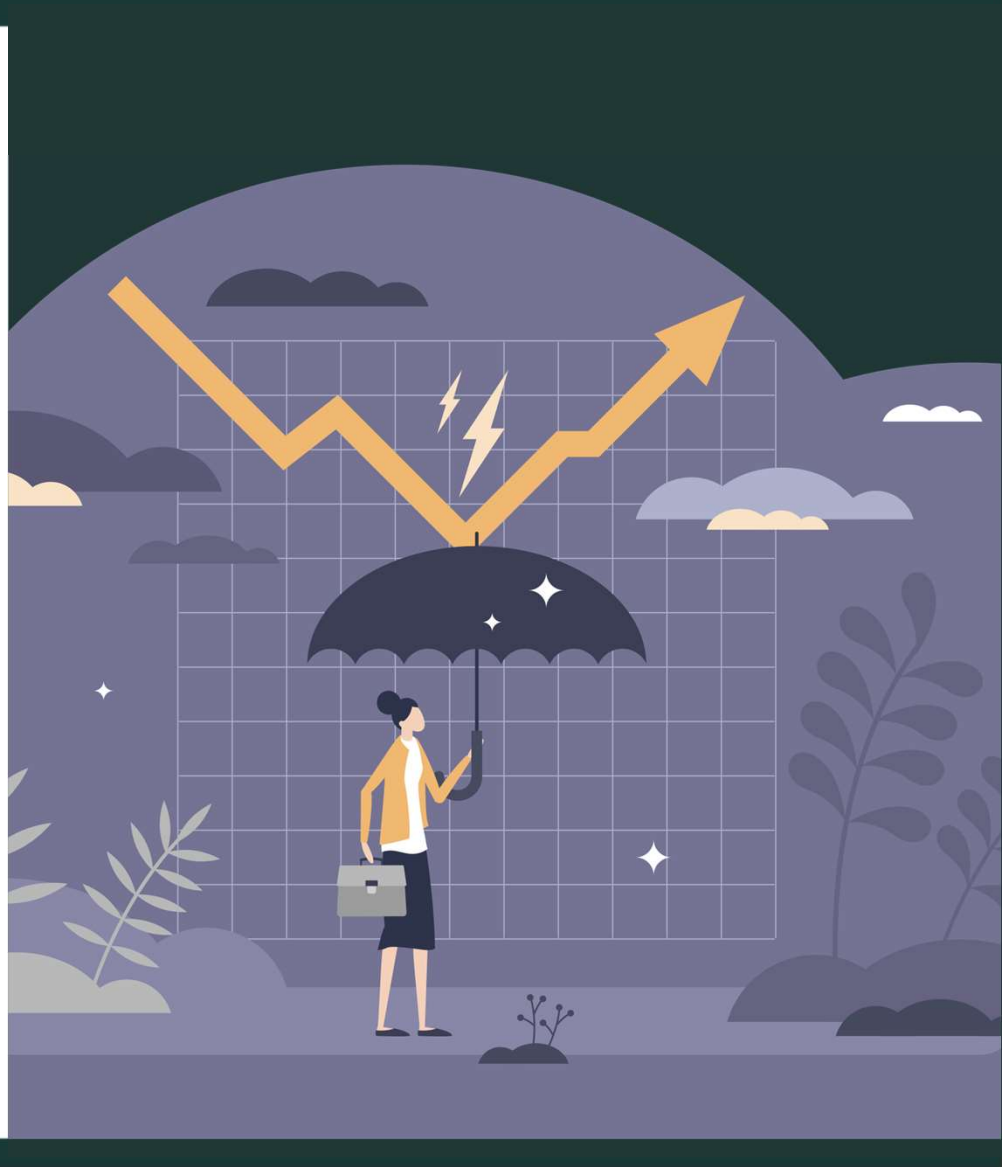
- reconstruction or reinstatement coverage for ecosystem infrastructure
- investment de-risking for large-scale restoration projects
- performance insurance for nature-based solutions

Financial protection is no longer a mere financial service

Insurance is a *critical infrastructure* to economic stability, social cohesion, and climate resilience, rather than just a mechanism for compensating losses.

Insurance

- conditions access to essential services (e.g. mortgage or reconstruction loans),
- determines recovery speed,
- redistributes climate risks across society.

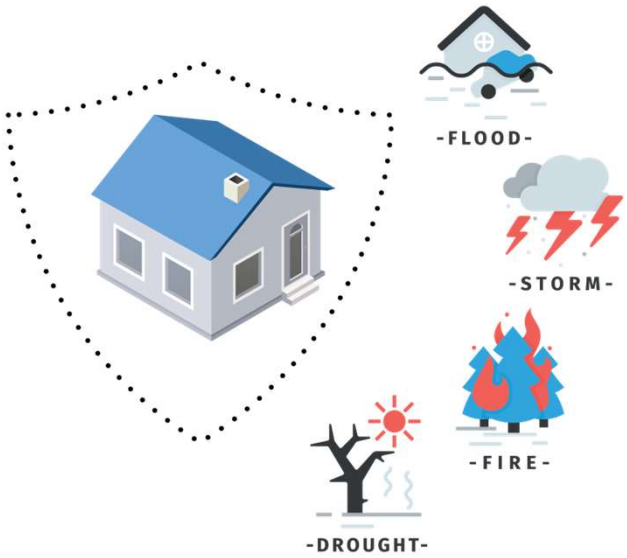


Loss of financial protection is both a direct risk and a systemic risk driver

Low insurance penetration, affordability constraints, and uninsurability erode the financial buffers that enable societies to withstand and rebound from disasters.

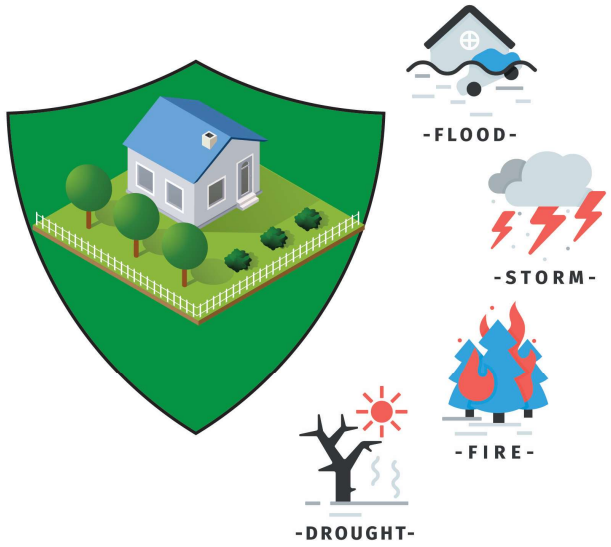
This is not solely an industry concern; it is a collective responsibility central to economic stability and social cohesion.

Steps to Transform Insurance into Ecosystem Finance

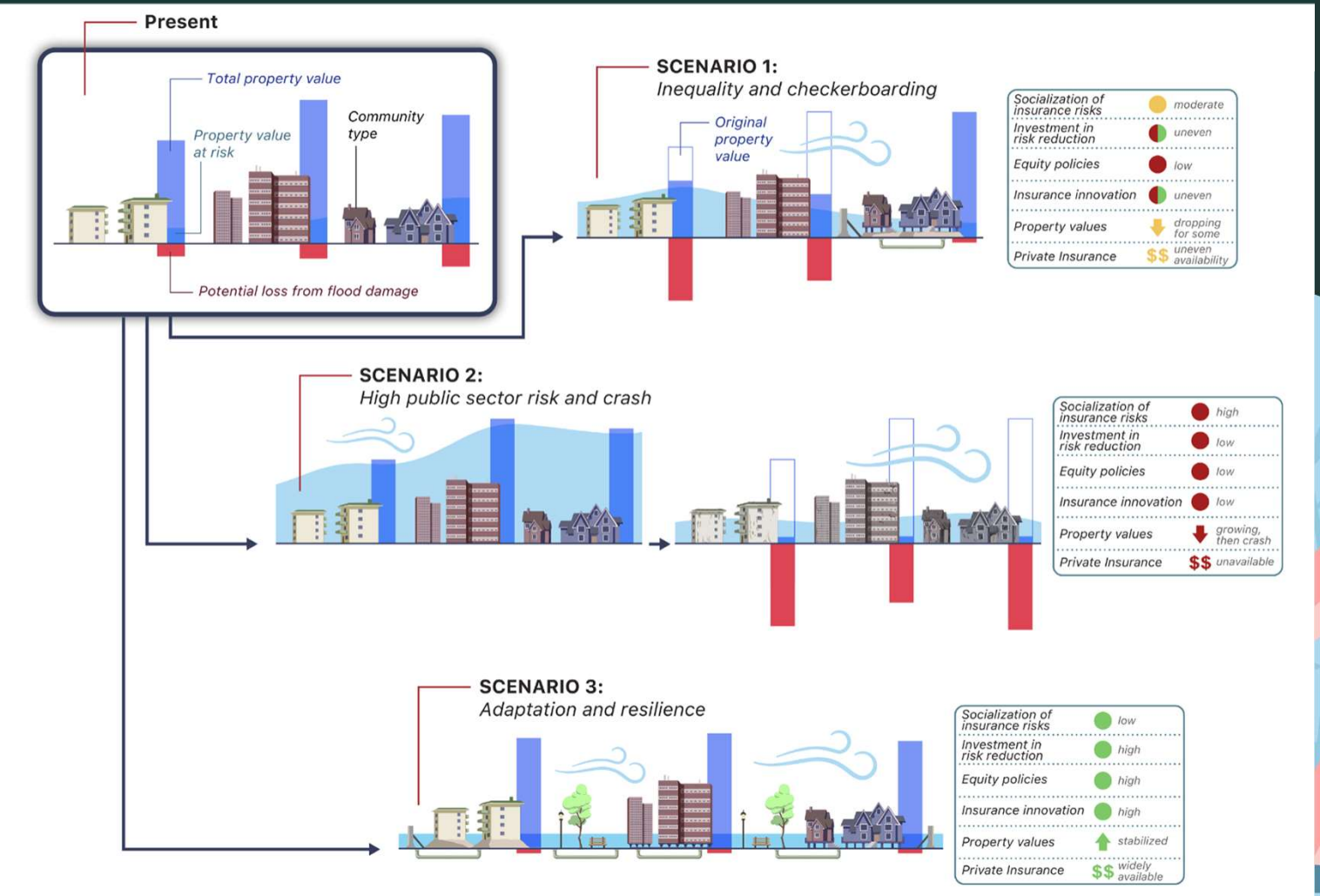


As financial protection declines, property markets are left to absorb risk. Incomplete hazard maps and risk metrics often misrepresent the scale and timing of risk.

Insurance protects property from climate-related damage but offers little incentive to reduce risk beyond contract terms; coverage may be lost if it becomes unsustainable.



Insurance promotes risk reduction through contracts and innovative schemes, fostering confidence in continued coverage as climate-related damage rises.



Kousky, et al.. *Proc. Natl. Acad. Sci. U.S.A.* **121**, e2317875121 (2024).

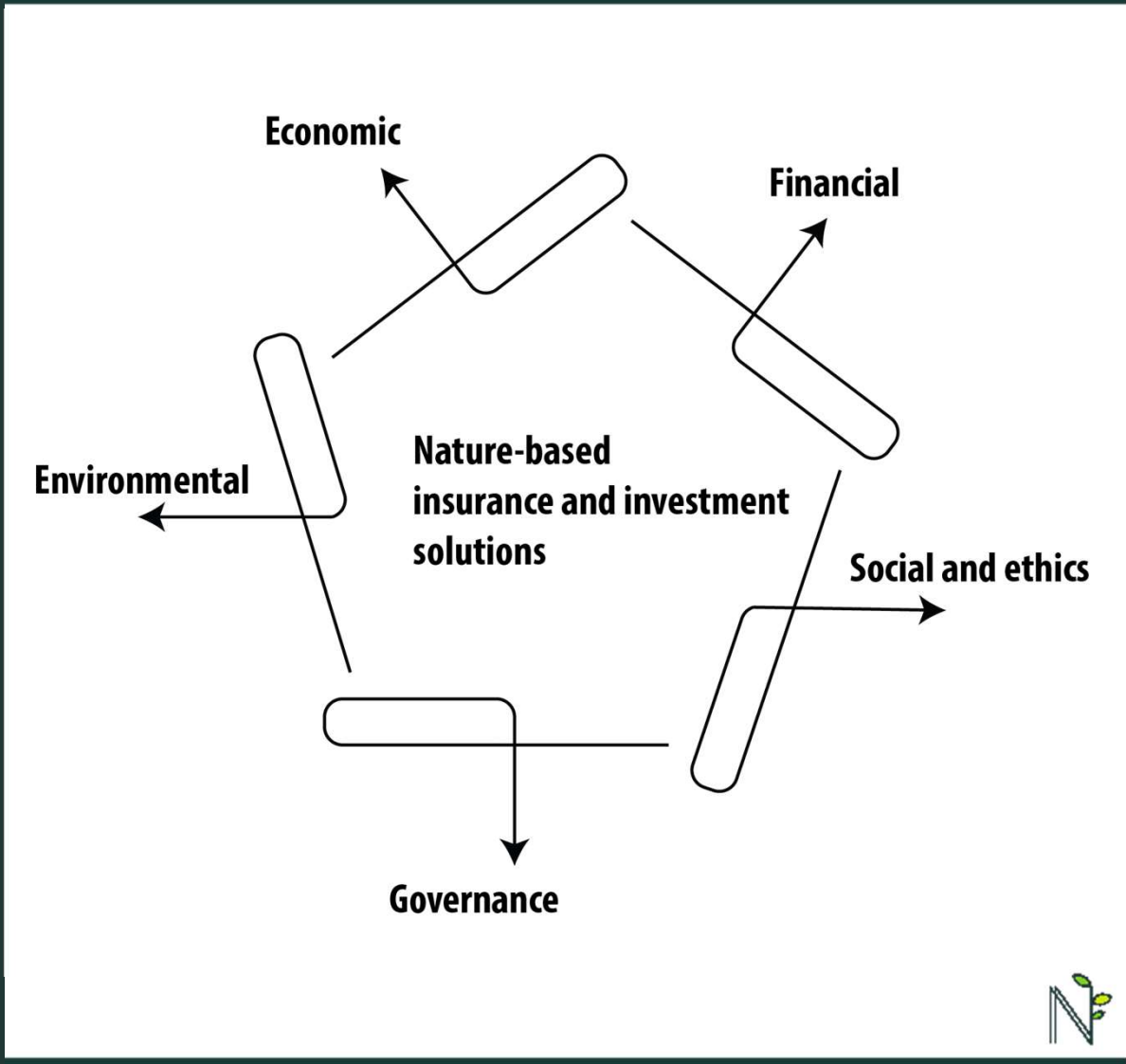
Design principles under CEN Workshop Agreement CWA

- Economic soundness
- Financial viability
- Environmental integrity
- Social value and ethics
- Governance

- (1) Solutions must demonstrate measurable and material risk reduction against clearly defined hazards, based on transparent and robust assessments.
- (2) Solutions must be financially sustainable over their life cycle, with a credible business case aligned with insurance and investment practices.
- (3) Solutions must deliver net positive outcomes for nature, avoid significant harm, and ensure climate-resilient, well-maintained ecosystems.
- (4) Solutions must ensure fairness, inclusivity, and accountability through meaningful engagement, equitable benefit-sharing, and transparent communication.
- (5) Solutions must be supported by clear governance structures, transparent data management, and credible monitoring, reporting, and verification processes.

Shared metrics

- break down the guiding principles into evidence that can be assessed, compared, and used to track performance, quality, and change,
- a common set of qualitative and quantitative indicators, definitions, and evidence-gathering rules organised in an auditable and proportionate framework for Monitoring, Evaluation, and Learning (MEL)



Metrics – economic soundness

Demonstrate that the solutions "make sense" from broader social welfare point of view

Subcategory	Metric / Indicator	Description / Measurement Method
Risk reduction	Change in annual expected damage and loss (absolute and %)	Difference in expected annual damages or losses between the baseline and project scenarios. Derived from hazard, exposure, and vulnerability models.
	Change in event-based loss or damage	Avoided damage for defined hazard events (e.g., 1-in-100-year flood) compared with the baseline condition.
	Reduction in physical risk parameters	Physical improvements such as peak flow reduction, temperature moderation, erosion control, or flood extent reduction.
	Beneficiaries protected or exposure reduced	Number of people, households, or assets benefiting from the intervention, or the total exposure reduced within the project area.
Co-benefits	Ecosystem service enhancement index	Improvements in key ecosystem services (e.g., water quality, carbon sequestration, biodiversity habitat, recreational value). Include biophysical or proxy indicators.
	Social and cultural benefit score	Non-market benefits such as improved wellbeing, community engagement, or cultural and recreational value associated with restored ecosystems.
	Cross-sectoral impact description	Qualitative or semi-quantitative assessment of induced positive effects in other sectors or regions (e.g., improved water retention benefiting agriculture or energy).
Economic materiality	Benefit–cost ratio (BCR)	Present value of avoided damages and co-benefits to the total cost of implementation and maintenance.
	Loss avoided per euro invested	Measure of efficiency, showing how much loss is prevented for each euro invested.
	Indicative premium or capital requirement effect	Potential change in insurance premiums or capital costs due to the verified reduction in risk.
	Payback period	Time required for cumulative avoided losses and co-benefits to equal investment costs.
Robustness and credibility	Documentation of models, data, and assumptions	Transparency and reproducibility of methods and data sources used for baseline and project scenarios
	Uncertainty range or sensitivity analysis	Confidence interval or range of variability in key metrics under different plausible scenarios
	Third-party verification	Independent review and validation of risk and benefit assessments
	Compliance with relevant standards and frameworks	Alignment with applicable standards for adaptation and sustainable finance

Metrics – financial viability

Dimension	Metric / Indicator	Description / Measurement Method
Cost structure and efficiency	Capital and operating cost breakdown	Total capital expenditure (CAPEX) and operational expenditure (OPEX), including monitoring, maintenance, and, where relevant, end-of-life or decommissioning costs
	Cost per unit of risk reduced	Total cost of implementation and operation divided by the quantified risk reduction (for example, avoided loss per year or per exposed asset)
	Lifecycle cost coverage ratio	Secured or projected revenues and repayments to total lifecycle costs, indicating whether the business case is financially sustainable
Funding and revenue structure	Confirmed funding sources and repayment pathways	Committed funding streams, revenue sources, or repayment mechanisms (for example, public grants, insurance savings, loans, or blended finance)
	Leverage of private and public capital	Proportion of private and public funding and the degree of financial leverage achieved through co-financing arrangements
	Greenium or avoided-loss savings captured	Reductions in financing costs or realised savings resulting from improved risk profile or sustainability value
Financial resilience and risk management	Sensitivity and scenario analysis	Financial performance changes under plausible variations in key assumptions such as hazard intensity, maintenance costs, or discount rate
	Contingency and reserve provisions	Adequacy of contingency funds, guarantees, or reserve mechanisms for unexpected costs or performance shortfalls
	Alignment with insurance and underwriting logic	Mapping of expected risk reduction to underwriting, coverage terms, and pricing, including treatment of basis risk in parametric solutions
Revenue and benefit distribution	Benefit allocation map (who pays and who benefits)	Distribution of costs, benefits, and liabilities among actors and beneficiaries, including public and private stakeholders
	Co-benefit monetization or value capture ratio	Proportion of measurable co-benefits (for example, ecosystem services or avoided losses) that are incorporated into the revenue or repayment model
Robustness and credibility	Transparency of financial assumptions and data	Cost estimates, discount rates, and financial assumptions clearly documented and verifiable
	Independent financial or technical review	Business case has been reviewed or audited by qualified external parties
	Compliance with relevant standards and taxonomies	Alignment with applicable standards for adaptation and sustainable finance

Metrics – environmental integrity

Dimension	Metric / Indicator	Description / Measurement Method
Nature-positive outcome	Net change in habitat condition or area	Comparison of pre- and post-project habitat condition (quality, extent, or functionality) using recognised metrics such as habitat condition indices, species richness, or ecosystem integrity scores
	Biodiversity net gain (%)	Percentage increase in biodiversity or ecological value relative to the baseline, calculated through standardised biodiversity accounting methods (e.g., habitat hectares)
	Ecosystem service enhancement index	Changes in ecosystem service provision (e.g., water retention, carbon storage, soil fertility, pollination) based on modelling or biophysical assessments
Avoidance of harm	Do No Significant Harm (DNSH)	Project meets DNSH criteria under the EU Taxonomy; no significant harm occurs to other environmental objectives
	Residual impact and offset ratio	Remaining negative impacts and documents measures for restoration or offsetting to ensure a net positive outcome
Ecological design and contextual fit	Alignment with local ecological context	Design choices (species selection, hydrological design, landscape configuration) reflect local ecological, geomorphological, and climatic conditions
	Integration with landscape or catchment strategy	Project fits within broader ecological processes or regional restoration and conservation plans
Monitoring, maintenance, and adaptive management	Ecological monitoring plan and frequency	Ongoing monitoring programme is in place, with clearly defined indicators, data sources, and reporting intervals
	Adaptive management plan	Existence of a structured plan to revise practices or targets when monitoring results diverge from expectations
	Stewardship and governance arrangements	Long-term management and financing responsibilities, including community or institutional roles in stewardship
	Transparency and disclosure of results	Monitoring results and revisions are reported transparently and accessible to relevant stakeholders
	Compliance with relevant standards and taxonomies	Alignment with applicable standards for adaptation and sustainable finance

Metrics – social value and ethics

Dimension	Metric / Indicator	Description / Measurement Method
Stakeholder engagement and participation	**SH engagement plan and implementation**	Existence of a documented and time-bound engagement plan, with identified SH, consultation methods, and how feedback is used in design and implementation
	Inclusiveness and representation index	Diversity and representativeness of SH engaged, including gender, age, vulnerable groups, and local communities
	Community ownership or participation level	Extent to which communities are involved in decision-making, management, or monitoring (for example, through local committees or stewardship agreements)
Equity and benefit distribution	**Benefit-sharing arrangements**	Existence and fairness of benefit-sharing or compensation mechanisms that ensure equitable access to benefits and distribution of costs and risks
	Affordability and access provisions	Existence of provisions to ensure affordability or access for disadvantaged or vulnerable groups
	Distributional equity assessment	Extent to which benefits and burdens are distributed fairly and do not reinforce structural inequalities
Respect for rights and cultural values	**Integration of local and traditional knowledge**	Recognition and integration of indigenous, local, or traditional knowledge into design and management
	Cultural heritage and land tenure rights	Solution respect land tenure rights and protect cultural heritage sites and practices
Transparency, accountability, and ethical governance	**Transparency of methods and results**	Assesses whether consultation outcomes, design changes, and performance reports are publicly available and communicated in accessible language
	Social and ethical risk assessment	Potential social or ethical risks have been identified, assessed, and mitigated, including conflict potential or exclusion risks
	Compliance with relevant standards and taxonomies	Alignment with applicable standards for adaptation and sustainable finance

Metrics – governance, data and assurance

Dimension	Metric / Indicator	Description / Measurement Method
Governance structure and accountability	Roles and responsibilities	Governance documents (contracts, mandates, or memoranda of understanding) clearly specify who is responsible for delivery, operation, maintenance, and corrective action
	Decision-making and oversight mechanisms	Existence of procedures for decision-making, approval, and oversight, including independent review or board-level supervision where relevant.
	Long-term management	Responsibilities for long-term stewardship and maintenance beyond the initial pilot period.
Policy and regulatory alignment	Alignment with policy and regulatory frameworks	Alignment with national and international adaptation, DRR, environmental, and financial regulations is explicitly documented
Data quality and management	Data quality assurance and documentation	Datasets meet defined quality criteria, including origin, version control, validation, and transparency of assumptions.
Monitoring, reporting, and verification (MRV)	Existence of MRV plan	Monitoring, reporting, and verification schemes exists, with specified indicators, frequency, responsibilities, and data sources
	Independent review or third-party assurance	Key results are independently verified, audited, or reviewed at critical milestones
Correction, learning, and adaptive management	Corrective-action procedures	Existence of procedures that specify how underperformance is addressed and by whom.
	Adaptive management framework	Mechanism for learning and iterative improvement, with adjustments based on monitoring outcomes.

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THANKS