

## **Governing Insurance Value of Ecosystems**

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Ecosystems can provide natural insurance against adverse events, such as flooding or pest outbreak – and against gradual losses for example to do with eutrophication or loss of soil fertility. Investing in natural insurance can be economically attractive for landowners, cities or businesses if they recognise their reliance on the buffering capacity of ecosystems. If these actors recognise the returns of investing in natural insurance, they are likely to carry the responsibility over sustainable management. Alternatively, the actors can transfer the responsibility of risk management to commercial insurance, which distributes the risk of adverse events across insurers and the entire insurance value chain.

In reality risk management is segregated into natural resource and land-management sectors, businesses and utilities as well as insurance and financiers. Each of these actors and sectors carries some responsibility over ecosystem sustainability but not in a way that would be informed by the value of natural insurance, or in ways that would credit these actors. As a result, most often the evaluation and management of risk does not rest on, or make use of, natural insurance. Short time-horizons, spill-overs of benefits, ill-defined property rights and high transaction costs constrain private actors' risk management through investments in sustainable ecosystems.

Much of nature-based risk management is carried by the public sector, governed through public policy, e.g., urban zoning, permits for commercial activities, incentives for ecosystem restoration, or best management practice commitments. Public policy includes also liability and insurance regulation, which returns the responsibility on private sector actors. There is also an increasing interest in developing markets for the insurance value of ecosystems. Yet all institutional solutions to govern insurance value provision face the challenge of bringing together and coordinating the actions of wide range of stakeholders.

This session contributes to the conference theme “reflective and responsible turn in sustainability science” by bringing together ideas, approaches and findings on how lurching ecological risks can be managed by different actors, sectors and governance systems through the consideration of the insurance value of ecosystems. The different sustainability governance arrangements differ in levels of agility and reflection, and in their opportunities to assign responsibilities to manage risks.