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Risk insights for sustainable and resilient societies and ecosystems

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As presented in the UN Global Assessment Report on Disaster Risk Reduction 2019, extreme changes in ecological and social systems are happening now, across multiple dimensions and scales more quickly and surprisingly than we ever thought possible. Non-linear, systemic change is a reality, and new risks and correlations are emerging in ways that we have not anticipated. Cost estimates of unmitigated climate change for instance, are now considered “potentially infinite”. Threats that were once considered inconceivable, no longer are.

Risks generated by the interaction of complex human and natural systems, amplified by changes in the climate, are increasing the propensity for systems reverberations, setting up feedback loops with cascading consequences that are larger, more complex and more difficult to foresee – undermining, and potentially reversing efforts to achieve the 2030 Agenda for Sustainable Development.

In seeking to build the resilience of economies, communities and ecosystems, UN Member States adopted the Sendai Framework, which considerably expanded the scope of hazards beyond natural, to include man-made hazards and related environmental, technological and biological hazards and risks. In so doing, States endorsed the shift from managing disasters to managing risks, calling for a better understanding of the underlying drivers of risk as well as their impacts.

The Sendai Framework stipulates that the global community must come to terms with a new understanding of the dynamic nature of systemic risks, new structures to govern risk in complex, adaptive systems and develop new tools for risk-informed decision-making that allows human societies to live in and with uncertainty.

This compels new approaches to improve understanding and management of risk dynamics and risk drivers at a range of spatial and temporal scales. It requires particular emphasis on the interaction among different systems resulting from the activities of humans in nature.

The era of hazard-by-hazard risk reduction is therefore over, and while modelling and metrics are important, we can no longer use the past as a reliable indicator of the future. We need to reflect the systemic nature of risk in how we seek to manage it, tuning our understanding of anthropogenic systems in nature. This means moving away from working on distinct even isolated areas of risk when researching, designing and implementing interventions. We need to incentivize interdisciplinary and transdisciplinary, integrated, multisectoral risk assessment, analysis and decision-making to improve efficiency, reduce duplication and allow for connected, collective

action. The pluralistic, systemic nature of risk demands a shift in the way we generate, collect, structure data, and organise our research, our thinking, our decisions, how we invest.

For the risk science community to effectively support, engage and guide the implementation of the Sendai Framework, the Paris Agreement on climate and the 2030 Agenda, in humanity's attempt to establish resilient development pathways for society and planetary health, we must expedite greater alignment and more effective deployment of finite scientific, academic and technological capabilities, and determine and operationalise frameworks for the governance of systemic risks that allow decisions to be made cognisant of (and more comfortable with) complexity and uncertainty.