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CEPA strategy guidance note on

Risk management frameworks

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The [United Nations Committee of Experts on Public Administration \(CEPA\)](#) has developed a set of principles of effective governance for sustainable development. The essential purpose of these voluntary principles is to provide interested countries with practical, expert guidance on a broad range of governance challenges associated with the implementation of the 2030 Agenda. CEPA has identified 62 commonly used strategies to assist with the operationalization of these principles. This guidance note addresses risk management frameworks, which are associated with the principle of sound policymaking and can contribute to strengthening the effectiveness of institutions. It is part of a series of such notes prepared by renowned experts under the overall direction of the CEPA Secretariat in the Division for Public Institutions and Digital Government of the United Nations Department of Economic and Social Affairs.

In reading this guidance note, individuals in government ministries and agencies who are less familiar with the topic will be able to understand the fundamentals. Those who have perhaps taken initial steps in this area with limited follow-through or impact will be able to identify how to adjust elements of their practice to achieve better results and to better embed and institutionalize the strategy in their organizations. Those who are more advanced in risk management frameworks will be able to recognize the practices which contribute to their success.

Understanding the strategy

The COVID-19 pandemic has exposed the harsh consequences of flawed or inadequate risk (and crisis) management frameworks and practices in the public sector in countries around the world. While this reality check¹ raises the awareness and understanding of risk, it also provides an opportunity to strengthen the contribution of risk management to effective governance for sustainable development.

Risk can be defined in different ways. In a broad definition, risk is the effect of uncertainty on objectives.² The negative outcome of risk is expressed as the combination of the probability of an event and its negative consequences. Upside risks present the opportunities of positive developments. Systemic risk describes configurations of risk that can lead to a breakdown or at least a major dysfunction of a system as a whole, as illustrated by recent events, such as the COVID-19 pandemic or the global financial crisis.

Risk management is the identification, measurement, monitoring and evaluation of diverse risks (hazards, disasters, shocks) followed by a coordinated and cost-effective application of resources (prevention, mitigation, preparedness, resilience) to minimize and control the probability and impact of exposure and to try to maximize the realization of possible returns.

Risk management frameworks (RMFs) in the public sector entail the institution and incorporation of effective risk management systems, processes and strategies into the modus operandi of public institutions and governments.³ The risk cycle includes crisis management and building back or recovery.

In a broader perspective, risk governance emphasizes the strategic role of non-state actors and inclusive stakeholder engagement, which is important for the co-design and co-generation of information, evidence and policy proposals. Beyond raising the quality of risk management decisions, effective stakeholder involvement has the potential to improve the legitimacy of these decisions,⁴ which in turn can raise the compliance of citizens and businesses.

RMFs can be applied to individual policy sectors or to clusters of interdependent policy sectors, the most comprehensive of which are for all practical purposes the Sustainable Development Goals (SDGs), including the climate change agenda. Integrated risk management – managing risks across sectors and levels of government – recognizes that risks can intersect, overlap or result in additional risks elsewhere, all of which would be neglected

¹ Ten years ago, the pandemic was included in an OECD list of five future shocks. OECD, 2011, *Future Global Shocks: Improving Risk Governance*, OECD Reviews of Risk Management Policies, OECD Publishing. Available at <http://dx.doi.org/10.1787/9789264114586-en>

² Geoffrey Okamoto (Knightmare Uncertainty – In the COVID-19 world, risk has become riskier, IMF Finance and Development, September 2020, p. 10-11) referring to Frank Knight's distinction between risk (a quantity susceptible of measurement) and uncertainty argues that we are living in the most *unmeasurable* times.

³ This note addresses the management by public administrations of risks that are external to public institutions themselves. Internal risks, for example in public procurement or anticorruption, are not considered.

⁴ International Risk Governance Center, 2020, *Involving stakeholders in the risk governance process*. Lausanne: EPFL.

by a single risk focus. Integrated approaches make space for mainstreaming cross-cutting issues, such as gender equality across all risks.

RMFs are closely related to SDG 16 and its focus on accountability and transparency reflecting the RMFs' evidence-based analysis, data analytics, auditing and other quality processes. References to risk and related notions can be found throughout the 2030 Agenda and the SDGs. A case in point, given the current circumstances of the COVID-19 pandemic, is SDG target 3.d, which encourages the “strengthened capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks.”

Background conditions for RMFs

Some background conditions and catalysts for RMFs to emerge and evolve in the public sector are:

- Ease of identification, operationalization and quantification of threats and opportunities, often prevalent in sectors like public finance; tax administration; debt and performance management; health and environment, including disaster and crisis management; anti-money laundering; counterterrorism financing; and corruption, to name a few.
- Availability of the technical means and tools to detect, measure and assess the relevant threats and opportunities including the financial resources, technical skills and human capital to adopt, apply and advance such tools. RMFs are more widespread in resource-rich public administrations that have faced threats. Most national risk assessment exercises are launched in the wake of major disasters and crises.
- Prior institutionalization of risk management in any given sector or across the public sector (such as contingency planning, prevention, protection, vulnerability assessment, impact forecasting, insurance, regulation and modelling) and/or an enabling developmental and governance context for their adoption and implementation.
- Robust institutional coordination and integration mechanisms (offline and online), interagency linkages, and collaboration and cooperation frameworks including interoperability backed up by the appropriate digital government and information and communication technology (ICT).
- Adherence to regional, interregional and global agreements requiring or encouraging a national risk assessment or related process (such as the [Financial Action Task Force in Anti-Money Laundering/Countering the Financing of Terrorism](#), the [United Nations Convention Against Corruption](#) and the [Sendai Framework for disaster risk reduction](#)).

High level objectives and challenges to RMFs

Risk management is a core government responsibility. RMFs aim at sound policy and informed decision-making. They increase productivity, effectiveness, value creation, sustainability and

resilience.⁵ Governments taking risk into account in policymaking and effectively mainstreaming risk management in their development strategies and governance frameworks have stronger emergency and crisis management records. This includes preventing, treating, recovering from and controlling hazards, shocks and disasters.

In the context of the SDGs, integrated or multisectoral risk management maps interdependencies of risks across SDG areas, locates the nodes of overlaps and intersections and evaluates associated synergies and trade-offs. Incorporating the evidence, the policy responses include the establishment of institutional zones of coordination across SDGs and levels of government for greater policy coherence. It instills and nurtures a risk culture throughout the public sector.

Assessments of the impact of RMFs are scarce. Nevertheless, several sectoral analyses have estimated the value added by the effective application of risk management techniques in diverse areas. For instance, the World Health Organization estimated that had Western Africa built a proper disease prevention and control system ahead of the Ebola crisis in 2014, it would have required less than one half of a per cent of the cost of dealing with the epidemic ex post.

The political economy of risk management adds to the challenges of implementation. Being a highly technical and complex subject, it requires sophisticated modes of raising awareness, broadening understanding or mobilizing support against the resistance of vested interests due to local and internal bureaucracy, hierarchy or personal ambition, among other factors. “Unchecked, they absorb disproportionate amounts of time and energy to bring on side.” Communicating about avoiding losses or investing in resilience as public goods is not necessarily perceived as a positive message. The time horizons of risks and their management exceed electoral cycles, thus any beneficial impact lies in an undetermined future. Budgetary resources for risk management and investment compete with allocations for urgent needs and tangible improvements of current public goods and services.

Public sector situation and trends

Status of current RMFs

RMFs in the public sector are relatively new in application, with most public sector risk management initiatives dating back to the 2000s. RMFs received a considerable push in the aftermath of the economic and financial crisis of 2007–2008.

GRMF guidance and principles have been developed in various institutions, such as the International Country Risk Group, the International Standards Organization, the G20, the Organisation for Economic Cooperation and Development (OECD) and the World Bank. The Hyogo Framework of Action (2005–2015) introduced a coherent approach to disaster

⁵ OECD, 2014, *Boosting Resilience through Innovative Risk Governance*, OECD Publishing. Available at <http://dx.doi.org/10.1787/9789264209114-en>

risk management taken up by the Sendai Framework for Disaster Risk Reduction (2015–2030). It has expanded the spectrum of disaster risks (natural and environmental, technological, cyber, nuclear and industrial), their implications (on health, education and national security, among others) and their risk-informed treatment and control.

Financing is addressed specifically through the G20/OECD Methodological Framework of Risk Assessment and Risk Financing,⁶ including a guiding tool for country self-assessment. The World Bank and the government of Mexico highlighted the importance of integrated disaster risk financing strategies in strengthening resilience. Good practices of disaster risk finance were developed for the 2019 G20 Finance Ministers' Meeting.⁷

The OECD Recommendation on the Governance of Critical Risks (2014) follows a risk cycle approach building on earlier sector-specific policy advice. Bringing together practices and experiences from some 40 countries, it recommends that Member and non-Member countries should:

- establish and promote a comprehensive, all hazards and transboundary approach to country risk governance to serve as the foundation for enhancing national resilience and responsiveness;
- build preparedness through foresight analysis, risk assessments and financing frameworks, to better anticipate complex and wide-ranging impacts;
- raise awareness of critical risks to mobilise households, businesses and international stakeholders and foster investment in risk prevention and mitigation;
- develop adaptive capacity in crisis management by coordinating resources across government, its agencies and broader networks to support timely decision-making, communication and emergency responses; and
- demonstrate transparency and accountability in risk-related decision-making by incorporating good governance practices and continuously learning from experience and science.

Uneven progress in implementing RMFs

No global assessment of (sub)national RMFs exists to this day. Some sectoral and/or regional assessments can be found in the form of comparative policy and institutional analyses.⁸ The

⁶ G20/OECD, 2012, Disaster Risk Assessment and Risk Financing.

⁷ World Bank, 2019, Boosting Financial Resilience to Disaster Shocks: Good Practices and New Frontiers. World Bank Technical Contribution to the 2019 G20 Finance Ministers' and Central Bank Governors' Meeting.

⁸ For example, the Sendai Framework Monitor provides comparative data on the prevalence of disaster risk reduction strategies with local governments.

World Public Sector Report 2019⁹ refers to a sample of 83 countries from around the world that were reviewed with respect to primarily two issues: the availability of a national risk assessment and the most prominent institutions in charge of managing risks. In 2018, the OECD carried out an assessment of progress in risk governance¹⁰ building on the 2014 OECD recommendation. An example of a recent sectoral review presents the verification of risk management practices in migration policies among the 41 members of the Migration Governance Indicators,¹¹ which identifies major flaws in strategies for helping immigrants during crises, disaster risk reduction strategies addressing the displacement impact and recovery strategies, including for migration issues.

A synthesis of main trends from a governance perspective finds that adoption and effective implementation of risk management remains a work in progress in and across countries.

Effectiveness

In many countries, risk is mostly managed on a sectoral or thematic basis, with individual government agencies leading the process in their areas of competence. Line ministries, public agencies and regulatory authorities often have their own risk plans and officers in charge of managing sectoral risk. Such agencies include, among others, those in charge of customs and tax administration, budgeting and public debt management, border security and control, environment, urban planning, infrastructure, science and technology, food safety and quality, electric safety and energy production, and public healthcare systems. Most OECD countries have strategies to manage risk in some of the critical infrastructure sectors but have not mapped interdependencies across sectors.

Risk management in the areas of illicit financial flows, anti-money laundering and counter-terrorism financing (AML/CFT) and cybersecurity is growing rapidly – pushed by global, interregional and regional networks and institutional agreements across the globe.

(Sub)national governments and public institutions increasingly adopt integrated risk management beyond disaster and crisis management, interlinking various types and degrees of social, economic, political and sectoral risks and implications, including particularly those related to the fourth industrial revolution and digital transformation.¹² Where differences of effectiveness between government levels exist, the extent of exposure of risk managers to earlier disasters can be an explanatory factor.

Accountability

Institutional approaches to risk management differ widely. Permanent or ad-hoc National Risk Boards, commissions, working groups or task forces report on their analysis of trade-offs and

⁹ United Nations, World Public Sector Report 2019, Sustainable Development Goal 16: Focus on public institutions.

¹⁰ OECD, 2018, *Assessing Global Progress in the Governance of Critical Risks*, OECD Reviews of Risk Management Policies, OECD Publishing, Paris. Available at <https://doi.org/10.1787/9789264309272-en>

¹¹ IMO, MGI 2019.

¹² WEF, 2021, *The Global Risks Report 2021*, 16th Edition, Insight Report.

synergies among risks and their recommendations to different levels of central government. In countries with designated lead bodies for critical risks, only half of those report directly or through a minister to the head of government.

Chief Risk Officer positions are becoming more prevalent in countries, often those that are resource-rich, with the policy fields and sectors of national defence, finance and environment leading the way in risk-driven governance and governance of risk. In contrast, the position of National Chief Risk officer at the helm of country-wide risk governance arrangements is rare.

OECD countries have generally adopted national strategies with an integrated vision for the complete risk management cycle and some form of institutional leadership to drive the implementation of relevant policies across government agencies and levels of government. Less than half of the institutional drivers set priorities and allocate resources through a risk-informed process and only a few set performance targets. Many have no role in designing policies or in monitoring policy effectiveness.

National risk assessments covering all critical risks in a single document are being undertaken by more and more countries, both developing and developed, and often by those that have been and/or are likely to be hit by shocks and hazards. Methods, scope and frequency differ from country to country. In a recent United Nations sample, 60 per cent of reporting countries still lack risk assessments and would benefit from encouragement and/or support in capacity building.

Participation and partnerships

The nature and depth of involvement of non-state actors in the design and implementation of national risk assessments varies from country to country. In line with the greater sophistication of risk assessments, the importance of stakeholders in the process is increasingly recognized and new formats of engagement are being developed.¹³

The potential of risk sharing between government, the private sector and citizens; self-insurance by citizens and businesses; cost sharing among potential beneficiaries of public risk management; and intergenerational equity in terms of contributions, financing and the sharing of benefits are still largely unexploited.

Most OECD countries support scientific research with a view to benefit from its results for improving the management of risks. However, ensuring an effective feedback into the policy cycle remains a challenge. Countries have established “facilitators” to bridge the gap between science and informed decision-making.¹⁴

¹³ France is considering the establishment of a special citizen council to advise the government on its vaccination strategy.

¹⁴ For example in Japan: [Recommendation: Building a sustainable global society by strengthening disaster resilience: Developing an "Online Synthesis System \(OSS\)" and fostering "Facilitators" to realize consilience.](#)

Transparency and communication

Effective risk communication along the risk policy cycle is considered highly relevant for successful risk management, from prevention to response, preparation, review and monitoring of diverse risks. Nearly all OECD countries are transparent concerning the results of risk assessments albeit uneven across the nature of risks.

Governments are relying on sharing perspectives and assessments of quantitative cost-benefit analyses as well as employing behavioural insights to communication strategies. Regular emergency exercises take place in several countries, involving all or selected segments of the population.

The increasing use of technology and technology-based risk management tools and products encourages the uptake of RMFs across the world. Recognizing the potential of technology in both public and private sector risk management is one of the vital lessons learned from the COVID-19 pandemic, from real-time information and engagement of citizens and tracking of clusters of infections to online education, digital health services, and remote work and delivery platforms.¹⁵

Despite significant risk communication efforts in most OECD countries, there is no indication whether these efforts result in increased investment in self-protection and resilience measures. Efforts to engage the private sector in shared disaster risk communication to stimulate household and business investment in risk reduction measures have yielded weak results, notwithstanding the growth of insurance markets.

Evaluation and monitoring

Post-disaster policy assessments are frequent in OECD countries, but not necessarily used to revise risk management policies. Many OECD countries have updated their crisis management frameworks following major disasters. Only half have established capacities to identify novel, unforeseen or complex crises.

The overall focus and objective of RMFs show signs of shifting from short-term loss prevention and damage mitigation concerns to long-term resilience-building and sustainability.

Risk-informed policy decisions for sustainable development – a potential COVID-19 dividend.¹⁶

¹⁵ UN DESA, 2020, E- Government Survey 2020, Digital Government in the Decade of Action for Sustainable Development -With Addendum on COVID-19 Response.

¹⁶ “A COVID Dividend is the value we will reap from the reforms, changes in behavior and other innovations which were caused, prompted or dramatically accelerated by the COVID-19 pandemic that deliver sustained improvements in the social, economic, environmental, institutional, personal and community dimensions of our lives”, Stewart-Weeks, M. in UNDP DM (1.10.20): A Way Forward, Governing in an Age of Emergence.

The experiences of the COVID-19 pandemic are likely to be forceful drivers for more effective government and private sector RMFs alike¹⁷ – beyond the well-known challenges of public risk management in terms of its heavy top-down technocratic approaches, insufficient coordination among many actors, budget constraints, inadequate skills and lack of data. Among the shortcomings of current policy practices, underperforming or missing integrated risk assessments and poor coordination among public actors stand out. Strengthening risk management through political leadership and changing mind-sets is becoming a matter of urgency. Growing recognition of systemic risks can be expected to be at the centre of reform efforts, including in countries with advanced risk management capacities.

Whether the actual scale and scope of the changes will be incremental, evolutionary or radical will depend on the rigorous review and assessment of current national experiences, some of which are already taking place (such as in Parliamentary Inquiries in France and Germany, for example). The value of experience is obvious as countries exposed previously and/or earlier to health crises seem to be better prepared at the government level and in terms of the behaviour and attitudes of citizens and the business sector.

Progress in reviewing RMFs and pathways of reform will be influenced by exchanges and learning from experiences, technology and data availability, and the political commitment for reform. In many countries, contextual challenges include low levels of trust in the government and the perceived incapacity of the government to protect citizens against the pandemic and its far reaching economic, social and political impacts; absence or rudimentary levels of a shared risk culture in the public sector and in society at large; a changing risk landscape in terms of the occurrence of man-made and natural disasters;¹⁸ and increased complexity of crises and uncertainty regarding their consequences.

Although lessons learned from the pandemic are still in the early stages, potential reconfigurations of risk management and governance at this “age of entanglement”¹⁹ are increasingly considered in the context of development and the 2030 Agenda.²⁰ Strengthening a risk-informed culture of effective governance for sustainable development could be a promising development for three principal reasons.

- Policy coherence will improve as integrated risk management allows for (better) anticipation of risks across the SDGs by introducing risk assessment techniques and instruments to SDG implementation. In contrast to the Millennium Development Goals, risks and related notions of resilience and vulnerability permeate the SDGs. However, the overlapping, intersecting and cascading effects of risk are not captured.²¹

¹⁷ “We are witnessing the largest experiment in comparative governance we are likely to see in our lifetimes.”
Bratton, B., UNDP, 2020, p. 2.

¹⁸ [Time to say goodbye to “natural” disasters | PreventionWeb.net](#)

¹⁹ Begovic, M. and I. Johar, Dark Matter Labs, 2020, *A Way Forward – Governing in an Age of Emergence*.

²⁰ UNDP, 2019, *Risk-informed development – From crisis to resilience*.

²¹ WPSR, 2019, p. 132.

- Integrating institutional structures will generate synergies in the design and implementation of risk-informed SDG policies due to the shared practice of identifying and assessing trade-offs and synergies. Whole-of-government (horizontal and vertical coordination) and whole-of-society approaches (stakeholder involvement) are also shared ambitions of risk management and SDG implementation.
- Good experiences of integrated risk management in the SDG context could well trigger and accelerate a broader movement to help countries shed the frequently fragmented and siloed eco-systems of separate institutions, processes and instruments of sectoral risk management frameworks.

In addition, strengthening effective governance for sustainable development will coincide with a renewed emphasis on sustainability and resilience, which most of the visionary concepts for the “great reset” advance as critical elements of any blueprint of the post-COVID-19 world.²² Risk-informed sustainable development will greatly increase the chances of building forward better.²³

From an operational perspective, institutions of national governments in charge of the SDGs will need to develop capacities for risk-related anticipation and planning. As Centres of Government (CoG) are frequently entrusted with all – or an important share of – responsibilities for SDG policies, they will need to broaden their capabilities and/or integrate existing capabilities, for example, in the role of Chief Risk Officer. The current experience of pandemic crisis management is confirming a reinforced strategic role of CoG in many countries (such as Argentina, Italy and Latvia).²⁴ It provides a valid framework to reflect on how CoG could strengthen their risk management in the aftermath of the crisis when sustainable development will be back prominently on the agenda.²⁵

Systems thinking is not yet widely used in the public sector but might support risk-informed SDG implementation.²⁶ So far, systems thinking inside the public sector has been used as a ‘sense-making’ tool to make interconnectedness visible rather than as a day-to-day practice that helps guide everyday action and decision-making. Practice shows that making systems thinking actionable in the public sector does not rely on capacity alone. Public sector institutions and their ecosystems need to be adapted to new types of missions/challenges to be fit for purpose (budget cycles, organizational silos, feedback mechanisms, etc.). It can facilitate identifying developments previously perceived as unrelated to risk management and therefore passing undetected below the radar. An example is critical infrastructure, where

²² Schwab, K. and T. Malleret, 2020, *COVID-19: The Great Reset*, Forum Publishing.

²³ OECD, 2020, *Building a coherent response for a sustainable post-COVID-19 recovery*.

²⁴ Ibid.

²⁵ OECD, 2020, *Building resilience to the COVID-19 pandemic: the role of centres of government*.

²⁶ Hynes, W., M. Lees and J.M. Müller (eds.), 2020, *Systemic Thinking for Policy Making: The Potential of Systems Analysis for Addressing Global Policy Challenges in the 21st Century*, New Approaches to Economic Challenges, OECD Publishing, Paris. Available at <https://doi.org/10.1787/879c4f7a-en>.

significant privatization in the past has shifted responsibilities for building and operating large scale assets to private companies while their systemic relevance remains unchanged.

Notions of a much wider and deeper systemic reform agenda call for “new transitional governmental alliances for the transition we face as humanity”.²⁷ To deal with unknowable shocks, a new institutional infrastructure, an agile architecture for policy and regulation, new forms of legitimacy, distributed capabilities and new transnational alliances and global public interests are suggested.

Methods of implementation

The risk cycle

The design and implementation of risk management frameworks are progressing at different speeds across countries. However, they generally follow the risk cycle, which is also the organizing principle of most pieces of guidance and toolkits for practitioners of risk management.

A comprehensive model for the implementation of risk management in public administrations has been developed as a step-by-step approach by the United Nations Economic Commission for Europe (UNECE),²⁸ which offers guidance to administrative and regulatory authorities on risk-based decision-making. The International Risk Governance Center (IRGC) approach distinguishes two stages: understanding a risk and deciding what to do in response (Figure 1). Given the current constantly evolving risk context, particular attention to the agility, innovation and leadership of effective risk management frameworks is recommended.²⁹

In the first stage, all possible risks of achieving a single objective, a cluster of objectives or complex large-scale systems of objectives are in principle identified, measured (probability and expected impact) and evaluated (acceptable/core versus non-acceptable/critical risks). Estimating the size of risks is a critical scientific challenge. Evaluation is based on a risk appetite framework, which outlines the thresholds/benchmarks for risk acceptance/tolerance and assesses capacity to withstand risk in any given institution.³⁰ COVID-19 has underlined the imperative of including the risks and vulnerabilities of technological infrastructure (assets, facilities, data) in the assessments given its critical contribution to prevention, preparedness and crisis management.³¹

²⁷ Begovic, M. and I. Johar, 2020, Dark Matter Labs.

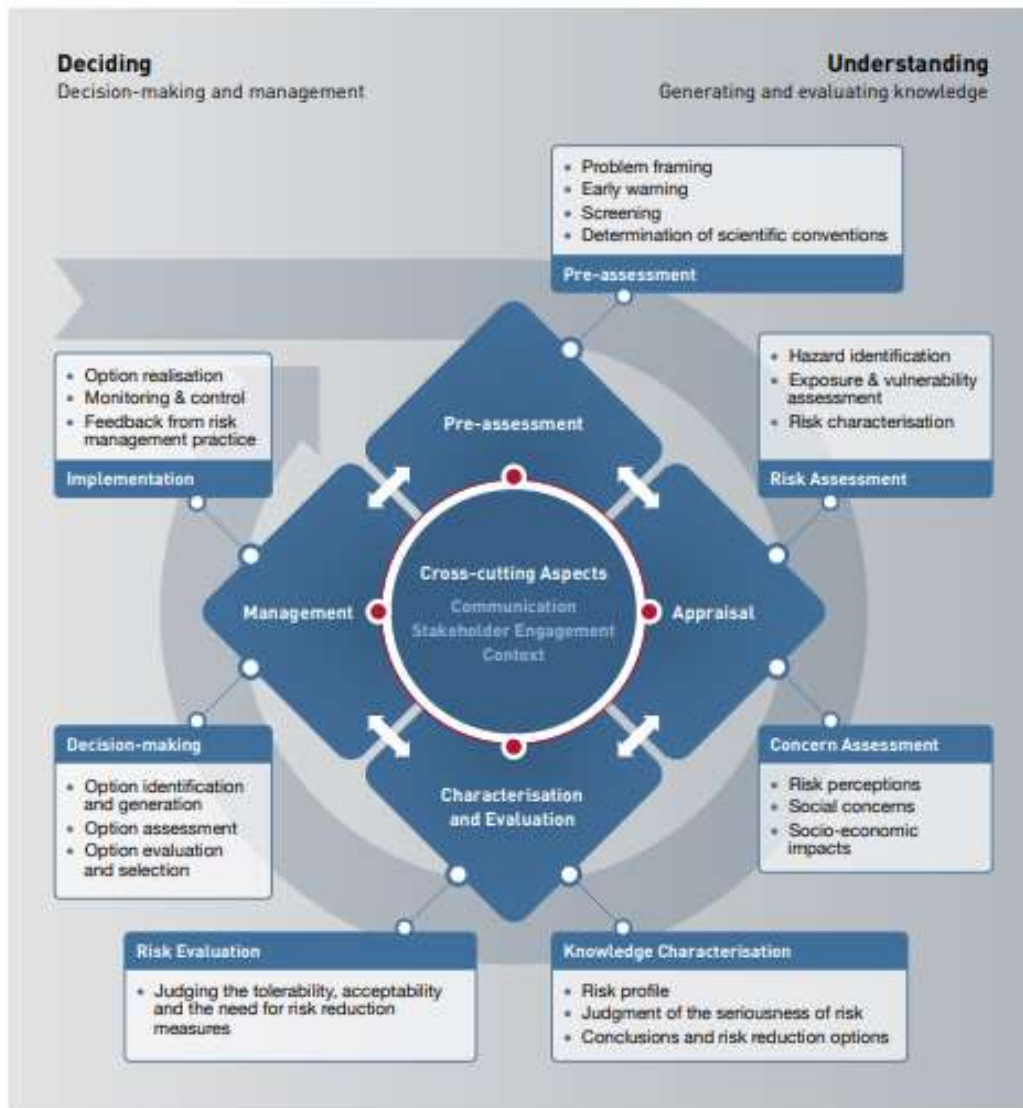
²⁸ UNECE, 2012, *Managing Risk in Regulatory Frameworks*.

²⁹ Smith-Bingham, R., A. Wittenberg and D. Kaniewski, 2020, *Building national resilience – Aligning mindsets, capabilities, and investment*, Marsh & McLennan Companies Ltd.

³⁰ RISKINSIGHT, 2020, *Achieving a sustainable world with the SDGs – How risk management can help you succeed*.

³¹ Atsuko Okuda.

Figure 1: The IRCG Risk Governance Framework



Source: Introduction to the IRGC Risk Governance Framework, revised version (2017).

There are, of course, also risks that are unavoidable and some are almost impossible to forecast. In those cases, it is the challenge of crisis management to set out what is to be done by whom and how, when harm occurs.

The selection of indicators of the impact of risk depends on the sector(s), the availability and disaggregation of data (by age, gender, disability and location, among others) and the type of assessment to be carried out. Table 1 includes standard impacts and examples of broad-brush indicators related to prominent SDGs. Alternative criteria for assessing risk impacts could

capture the materiality of risks through the lenses of human suffering, societal disruption, economic shock, environmental erosion and political weakness.³²

Table 1: Indicators of risk impact

Human life and health	Number of fatalities
	Number of seriously injured
	Extent to which number of injured exceeds regional healthcare resources
Economic impact/Asset damage	Cost of damage to infrastructure (incl. critical infrastructure)
	GDP losses
	Insured/uninsured losses
Natural environment	Change in the population of any species
	Change in ecosystem function
	Need for intervention to restore environment
Critical services	Extent and duration of disruption
Equality	Gender equity
	Change in income distribution
	Educational attainment

The decision and management stage starts when risk management strategies that are deemed adequate (risk mitigation, avoidance, acceptance, transfer, and/or exploitation) are selected and the owners of risk (risk officer, project manager and/or auditor) and their relationships with one another are identified. Evaluation and prioritization criteria must be selected, as well as for the instrument choice/s, such as technological, regulatory, institutional, or educational responses, transfer of risks, and compensation, among others.³³

Risk must be continuously monitored and controlled supported by robust risk communication strategies and in line with the overall workplan of any given organization and its overarching institutional mission and objectives.

Cross-cutting elements are effective with coherent communications and stakeholder engagement.³⁴ Trust in decision-making, use of evidence, reliance on scientific and technical expertise and confidence in advisory structures are not challenges specific to risk management, but will be of heightened importance.

³² Smith-Bingham, R., et al., 2020.

³³ IRCG, 2017, *Introduction to the IRGC Risk Governance Framework*, revised version. Lausanne: EPFL International Risk Governance Center.

³⁴ IRGC, 2020, *Involving stakeholders in the risk governance process*. Lausanne: EPFL International Risk Governance Center.

Stages of implementing risk management can be adapted to organizational needs and adjusted according to the shifting demands of the times. For effective implementation, however, certain common elements stand out. Accordingly, effective RMFs should be:

- integral parts of all organizational activities with explicit backing on the part of the top management and ownership by public managers;
- comprehensive yet customized and proportionate to the objectives of the organization;
- flexible and dynamic and able to respond to changes in an appropriate and timely manner;
- inclusive in seeking the feedback of all relevant stakeholders; and
- using effective information, data and knowledge management techniques and processes.

Different regions and countries subject to different types and degrees of threats can develop their own home-grown approaches to managing risk by sector, such as the Netherlands' well-known flood risk management systems, and advanced disaster risk management technologies and processes in disaster-prone Asia and the Pacific.

Integrated risk management employs methods and tools like scenario analysis, stress testing, vulnerability assessment, gap analysis, risk heatmaps, contingency planning, and others. The choice of the relevant tool and method may depend on a host of factors including the type, sector and stage of risk(s) faced and the probability-magnitude assessment of (actual and perceived) risk(s) in a given administrative context.

When taking an explicit step towards risk-informed SDG policies, governments will have to explore how to effectively manage risk across the range of sectors where they arise. This encompasses the following questions:³⁵

- What are major uncertainties and risks across SDG areas?
- How does the consideration of uncertainty and risk change strategies, plans and policies for implementing the SDGs? How can risk perspectives inform the management of nexus areas (e.g., climate, land, energy and water) and the associated synergies and trade-offs?
- How developed are risk-informed perspectives in public administration practice in different SDG areas at the national level?

³⁵ WPSR, 2019, p. 133.

- Are there causal linkages, synergies and tradeoffs among risks? Do some of them warrant joint management? Are the current government structures, institutions and capacities adequate for the delivery of multisectoral risk management?
- How do alternative strategies for managing risk affect different types of stakeholders and vulnerable groups (gender, youth, migrants) and what are good practices in terms of including stakeholders and vulnerable groups in risk management processes?

Systemic risk

Systemic risks are fundamentally different from conventional risks³⁶ (Table 2). Although still sometimes considered an exotic field of interest and research, the COVID-19 pandemic shows that systemic risks are closer to reality than one might think. Only ten years after the global financial crisis, another materialization of systemic risk is leaving most governments struggling to respond. Climate change is another area that demands urgent action, even if there are still voices that doubt that climate change is a systemic risk.

Table 2: Comparison of conventional and systemic risks

Type of risk	Definition	Main features	Examples	Implications
Conventional risks	Known and well-defined risks	<ul style="list-style-type: none"> • Familiarity – recognisable patterns and management regimes that are relatively stable and have proven to be effective if implemented according to certain rules 	<ul style="list-style-type: none"> • Bicycle theft • Salmonella infection • Car accidents • Obesity 	Use standard risk management practices, e.g., regulation
Emerging risks*	New risks or known risks that become apparent in new context conditions (IRGC 2015)	<ul style="list-style-type: none"> • Uncertainty regarding causes, potential consequences, and probabilities of occurrence • Lack of familiarity with the risk 	<ul style="list-style-type: none"> • New processes and products in the field of synthetic biology • Malaria spreading to higher latitudes 	Focus on early detection and analysis of elements that trigger emerging risks. Prepare to revise decisions and adapt
Systemic risks	Threats that individual failures, accidents or disruptions present to a system through the process of contagion	<ul style="list-style-type: none"> • Highly interconnected risks with complex causal structures, non-linear cause-effect relationships • Lack of knowledge about interconnections in an interdependent and complex environment, prevention 	<ul style="list-style-type: none"> • Desertification and collapse of the Aral Sea • 2008 global financial crisis • Pandemics • Cyber-security • Global climate change • Fish stocks depletion 	Focus on adaptation and transformation of the organisation and the system

* Some emerging risks may manifest themselves in complex systems and thus require a systemic approach to their assessment and management. Some systemic risks may be first seen as emerging.

Source: IRGC, Guidelines for the Governance of Systemic Risks.

³⁶ IRGC, 2018, *Guidelines for the Governance of Systemic Risks*. Lausanne: International Risk Governance Center.

A fundamental challenge to governing systemic risk is understanding the system as a complex network of individual and institutional actors with different and often conflicting interests, values and worldviews. The guidelines developed by the IRGC provide a step-by-step introduction to the complexity of governing systemic risks.³⁷

Effective governance is determined by the interconnected elements and interdependencies among individual risks, within and across systems. It requires a network perspective, with attention to interconnected nodes or agents. Individual and institutional decision makers need greater accountability and authority on the basis of collective responsibility.³⁸ Implementation assumes flexibility and adaptation to context, and requires strong leadership and preparedness to revise non-linear and non-sequential processes and to accept and resolve trade-offs.

Case studies

South-East Asian cities³⁹

Cities and metropolitan areas are increasingly drivers of development in their own right, reflecting the greater attention of public policies to place-based and territorial approaches. They remain nevertheless integrated in nationwide vertical governance structures across level of governments, as different approaches to “localizing” the SDGs and current experiences of COVID-19 crisis management demonstrate.⁴⁰ This also holds for risk management frameworks in Asian cities, which are particularly vulnerable to the risks associated with natural disasters.

Asia has suffered disproportionately from losses caused by natural disasters. Between 1980 and 2017, over 1.2 million people lost their lives, or 71 per cent of the total global loss of life, and financial losses amounted to \$1.69 trillion, or nearly 40 per cent of the total global loss of assets. The latter have increased due to more frequent disasters, as well as the increasing value of public and private assets located in vulnerable locations.

A recent assessment of Bandung (Indonesia), Bangkok (Thailand), Cebu (the Philippines), Haiphong (Viet Nam) and Iskandar (Malaysia) finds that disaster risk management (DRM) is often understood as a technical or environmental issue rather than as part of an urban agenda of resilience. The risk and vulnerability assessments of the five cities indicate weak

³⁷ IRGC, 2018, *Guidelines for the Governance of Systemic Risks*. Lausanne: International Risk Governance Center.

³⁸ Gordon, M. and S. Willam, *Can systemic risk ever be effectively governed?* PreventionWeb. UNDRR, 2019, Global Assessment Report on Disaster Risk Reduction, Geneva, Switzerland.

³⁹ The city-specific elements are based on OECD, 2018, *Building Resilient Cities: An Assessment of Disaster Risk Management Policies in Southeast Asia*, OECD Green Growth Studies, OECD Publishing, Paris.
<https://doi.org/10.1787/9789264305397-en>

⁴⁰ Lanshina T., V. Barinova, A. Loginova, E. Lavrovsky and I. Ponedelnik, 2019, *Localizing and Achieving the Sustainable Development Goals at the National Level: Cases of Leadership*. International Organisations Research Journal, vol. 14, no. 1, pp. 207–224 (in English). DOI: 10.17323/1996-7845-201901-12; OECD, 2020, *The territorial impact of COVID-19: Managing the crisis across levels of government*.

preparedness. Overall, it is recommended that South-East Asian cities develop a policy framework to mainstream DRM into different urban policy decisions. The report reveals a range of institutional arrangements and policy frameworks mostly determined by or closely related to risk management frameworks at the national level. A few practices that have emerged at the local level could be replicated elsewhere.

In 2015, the **Bandung Metropolitan Area (BMA)** launched, with external support, the fundamental steps and processes of a vulnerability and risk assessment, starting with a mapping exercise. Smart city technologies support flood risk assessment and the understanding of infrastructure resilience.

In terms of vertical and horizontal coordination, DRM could benefit from a BMA-level coordinating body approved in 2018 and a first of its kind in Indonesia. The objective is to coordinate DRM policies through BMA-wide master plans, but also to facilitate private investment in the region. West Java Province functions as a coordinator for the body and decisions will be collectively made by the five municipalities in the region, enhancing horizontal coordination. The central government can intervene on certain issues – the BMA is designated as a “national strategic area” – and has important financial influence as it can decide whether to prioritize projects collectively agreed upon by the BMA.

The **Metropolitan Area CEBU’s (MAC)** Roadmap Study for Sustainable Urban Development sets out concrete and comprehensive measures to enhance DRM.⁴¹ The MAC maintains highly collaborative working relationships between the public and private sectors, NGOs and civil society, which enable a more holistic and integrated response to expected and unexpected impacts of natural disasters.

This participatory comprehensive approach follows from (i) a strong delegation of responsibilities and regulatory powers to Local Government Units (LGU) in 1991, confirmed by the Philippine Development Plan 2011–2016, which supports the capacity building of cities and municipalities for better service delivery and accountability; (ii) a concerted national effort to align national and local planning through the Disaster Risk Reduction and Management Council, 80 provincial offices and 1,500 DRM offices at the LGU level in recognition of the role of local government as first responder to DRM events; and (iii) a continuously updated legal and institutional DRM framework for the national and local levels.⁴² Still, coordination challenges across sectors and levels of government remain. MAC’s significant challenges of horizontal coordination among its 13 LGUs has resulted in the establishment of the Metro Cebu Development and Coordinating Board with promising preliminary results.

The 2011 flood highlighted the vulnerability of the poor in the **Bangkok Metropolitan Region (BMR)** to extreme weather events: 73 per cent of people within its communities of

⁴¹ The 2018 World Risk Report ranks the Philippines third globally in terms of natural disaster risk. At least 60 per cent of the country’s land area and 74 per cent of its population are vulnerable to natural hazards, such as typhoons, flooding, earthquakes and volcanic eruptions.

⁴² The World Bank, 2020, *Building a Resilient Recovery – Philippines Economic Update*, December 2020 Edition.

urban poor were affected by the disaster – a far higher share than for more affluent segments of the population. Recognizing that floods disproportionately affect the urban poor in the BMR and deepen poverty and inequalities, resulting in weaker long-term economic growth, the administration changed its strategy from a top-down approach of pre-disaster preparation, incident management and post-disaster management to greater cooperation with local communities and their leaders. The benefits of consulting with the “first responders” mobilizes the local knowledge and experiences that lead to practical and viable community responses to disasters.

Hai Phong, located in the Red River Delta Basin, is one of the five provincial cities of Viet Nam directly supervised by the national government, an indication of the highly hierarchical, fragmented and inefficient system of governance.⁴³ Despite progress in managing disaster risks in recent decades, investing in structural and non-structural risk reduction measures and adopting extensive legal, regulatory and policy frameworks to guide coastal development in safe and sustainable ways, the measures fall short of the country’s needs.⁴⁴ This context limits the city’s horizontal DRM cooperation with the surrounding provinces despite its geographical and economic quality as a functional urban area. Space for disaster risk financing and stakeholder engagement are equally constrained. Within these boundaries, Hai Phong’s Steering Committee for Natural Disaster Prevention and City Rescue is a cross-departmental organization that has taken responsibility for advisory services, planning management, general DRM, search and rescue, and oil spill clean-up operations.

In **Iskandar** there is no dedicated local government agency coordinating DRM, except for the National Disaster Management and Relief Committee present at the regional and local levels.

Peer-to-peer learning and research

International risk management standards are published by ISO 31000 (most recently in 2018) as well as the Committee of Sponsoring Organizations (most recently in 2017). Many national and subnational governments and public entities base their RMFs on these and related international standards such as ISO 91000 and ISO/IEC 27001 on Quality and Information Security Management Systems, respectively. Other leading institutions such as the International Risk Governance Council, the Global Institute of Internal Auditors, Public Risk Management Organisation, and the International Organization of Supreme Audit Institutions (INTOSAI) have also published standards and guidelines. INTOSAI GOV 9100 guidelines for good governance and internal controls in the public sector also include those related to

⁴³ OECD, 2020, *Multi-dimensional Review of Viet Nam: Towards an Integrated, Transparent and Sustainable Economy*, OECD Development Pathways, OECD Publishing, Paris. Available at <https://doi.org/10.1787/367b585c-en>

⁴⁴ Rentschler, J., S. de Vries Robbé, J. Braese, D. Huy Nguyen, M. van Ledden and B. Pozueta Mayo, 2020, *Resilient Shores: Vietnam’s Coastal Development Between Opportunity and Disaster Risk*. Washington, DC: The World Bank.

entity risk management. However, more research will need to be undertaken to prepare guidelines and standards applicable to complex, networked risk behaviour.

Several international organizations are active in spreading awareness and supporting the development of RMFs in the public sector. The World Bank convenes the [Understanding Risk Forum](#) bringing together over 7,000 experts and practitioners of disaster risk management. The United Nations University's (UNU) [Risk Management and Adaptive Planning Section](#) develops and applies conceptual frameworks and scientific methods to assess the socio-economic vulnerability and risks of natural hazards, environmental change and societal transformation. [UNU's Institute for the Advanced Study of Sustainability](#) undertakes research, particularly in the field of water management. The United Nations Environment Programme provides training on [Environmental and Social Risk Analysis](#).

Regional governance bodies, such as the European Commission and the Council of Europe among others, often have their own learning and research networks. The OECD organizes a [High Level Risk Forum](#) providing the space for risk managers from government and the private sector to exchange good practices in critical risk management. It also holds a Global Forum on [digital security](#).

The private sector is also active in promoting peer-to-peer learning activities. Risk.net holds the [Risk and Regulation Forum](#). Several other international, regional and national risk management institutes and organizations also foster peer-to-peer learning by organizing conferences, forums, seminars and workshops (e.g. [Asia Risk Congress](#), [Institute of Risk Management](#), [Risk Management Association](#), [Risk Management Society](#), and [Public Risk Management Association](#)).

The University of Oxford's [COVID-19 Government Response Tracker](#) is a first step to understanding exactly what measures have been effective in certain contexts, and why. Its 18 indicators aim to track and compare policy responses around the world.

The United Nations Environment Programme's ongoing work supports the logic of integration in the context of the SDGs.⁴⁵ It suggests a dynamic methodology of policy coherence to be open to any mechanisms established during the next decade and beyond the 2030 timeframe. Introducing risk governance into the eight domains of the indicator⁴⁶ will facilitate the alignment of political, institutional and sectoral dimensions of risk management frameworks with the imperative of creating coherent SDG policies. The mechanism can also serve as an instrument to measure countries' policy performance.

⁴⁵ UNEP, 2019, Indicator 17.14.1: Mechanisms in place to enhance policy coherence of sustainable development.

⁴⁶ Political commitment, long-term considerations, interministerial and cross-sectoral coordination, participatory processes, integration of the three dimensions of SD, assessment of policy effects and linkages, coordination across government levels, monitoring and reporting for policy coherence, financial resources and tools.

Existing instruments for policy coherence at the national level also lend themselves to risk integration. The future-proofing of SDG policies, such as the Sustainable Impact Assessment (SIA) in Germany,⁴⁷ or the SDG Test for integral assessment of new policy, law and regulations in the Netherlands, might be extended by risk considerations.⁴⁸ Risk management could also be mainstreamed into countries' strategic vision statements or their national development plans.

The integration of risk management and the SDGs at the international level could draw on vertical coordination and coherence of the key components of the United Nations Sendai framework, the Paris Agreement, the New Urban Agenda and the 2030 Agenda.⁴⁹ Recent examples for advancing integration at the regional level include the ASEAN New Disaster Management Framework 2021–2025, which focuses on the contribution of risk management to safer communities and sustainable development.^{50,51} The New Leipzig Charter – the transformative power of cities for the common good (EU2020.DE) favours integrating risk management in localizing SDGs for better vertical risk policy coordination across levels of government.

International development cooperation

The United Nations supports countries in reducing and managing major risks to sustainable development. The United Nations Development Group (UNDG), through [UN Development Assistance Frameworks](#), integrates risk management into programming and seeks to reduce risks and build resilience through national capacity development and policy support. UNDG has guidance and toolkits on [Adaptive Governance](#) covering risk and its management. The United Nations University publishes the [World Risk Report and Index](#), measuring the vulnerability and exposure of over 170 countries to natural hazards.

Overall, the United Nations system's support to Member States takes place across all developmental areas covered by the SDGs, with particular emphasis on three issue areas:

- *Post-conflict risk management* – The United Nations Development Assistance Framework provides the largest percentage of international financial flows to fragile states in the aftermath of a disaster and to states in transition to recovery with an eye to preventing a regression to conflict.

⁴⁷ Jacob, K., A. Guske and V. von Prittwitz, 2011, *Consideration of Sustainability Aspects in Policy Impact Assessment: An International Comparative Study of Innovations and Trends*.

⁴⁸ OECD, 2018, *Policy Coherence for Sustainable Development 2018: Towards Sustainable and Resilient Societies*, OECD Publishing, Paris. Available at <http://dx.doi.org/10.1787/9789264301061-en>

⁴⁹ International Science Council Policy Brief: *Achieving Risk Reduction Across Sendai, Paris and the SDGs*.

⁵⁰ PreventionWeb.

⁵¹ The European Union improved their supra-national crisis management significantly in the wake of COVID-19, Alter, R., 2020, *Regional Governance: An Opportunity for Regional Organizations?* World Economic Forum (2020), Challenges and Opportunities in the Post-Covid-19 World, Insight Report.

- *Disaster risk management* – The United Nations International Strategy for Disaster Reduction [Sendai Framework for Disaster Reduction](#), provides guidance on national reporting indicators and targets to improve countries’ strategic capacity for national planning and priority-setting in risk reduction and resilience.
- *Financial risk management* – The [Inter-agency Task Force on Financing for Development](#) comprising over fifty United Nations agencies, programmes and offices, assesses and makes recommendations on debt crisis tackling several high-risk issue areas such as the trade financing gap, the data gap, illicit financial flows, and tax avoidance and evasion. The United Nations Development Programme’s (UNDP) [Financing Solutions Platform for Sustainable Development](#) links risk management with specific SDG targets. UNDP also provides risk management support at the [local level](#).

United Nations Regional Commissions are also active supporters of public sector RMFs. The Economic and Social Council for Asia and the Pacific’s [Regional Cooperative Mechanism for Drought Monitoring and Early Warning](#) aims to enhance government capacity to use space-based data for effective drought monitoring and early warning. [UNECE](#) has developed risk management methodologies and standards, including in the fields of [trade](#) and statistics. It has a Group of Experts on Risk Management in Regulatory Systems. The Group has developed three Recommendations: on “Managing Risks in Regulatory Frameworks”, “Crisis Management within a Regulatory Framework” and “Applying Predictive Risk Management Tools for Targeted Market Surveillance”. These recommendations are voluntary and they are addressed to governments, national and local administrations and authorities. They were adopted by UNECE respectively, in 2011 and 2016.

Specialized agencies bring their own expertise to sectoral risk management. The United Nations Environment Programme has a knowledge repository on [risk exposure](#) and a [Global Risk Data Platform](#) on global natural hazards. UN-Habitat has a [City Resilience Profiling Tool](#). The World Health Organization has a [Human Health Risk Assessment Toolkit](#). The OECD offers a [Public Procurement Risk Management Toolbox](#) and [Guidelines for Resilience Systems Analysis](#).

The International Science Council and the United Nations Office for Disaster Risk Reduction under the leadership of [IRDR](#) are establishing a technical process to achieve risk reduction across the Sendai Framework and the Paris Agreement.

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