

## CHAPTER 4:

# RISK MANAGEMENT IN PUBLIC ADMINISTRATION IN THE CONTEXT OF THE SUSTAINABLE DEVELOPMENT GOALS

## 4.1. Introduction

Awareness of the importance of risk and risk management in public administration has steadily grown in recent decades. Reflecting this, risk and related concepts permeate the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs). There is also broad recognition that the tools of risk management should be mobilized to support SDG implementation.

Public administration plays a central role in managing risk across all SDG areas, as risk manager, regulator, or in other roles. As risk management becomes prominent in development management, public institutions have to not only adopt risk management approaches and tools, but also adapt their cultures and ways of operating in order to embed risks considerations in their daily business.

This chapter examines how risks of various natures across the SDGs are addressed by public administration at the national level. It investigates the extent to which the incorporation of a risk perspective in public administration has changed over time, and how this has affected strategies and plans, policies and institutional arrangements in different areas. It illustrates mechanisms and tools that exist today in public administration at different levels to identify and manage risk in different SDG areas, how countries are using them, and challenges they face in this regard. Lastly, it presents some of the recent trends in terms of institutionalization of risk management in government, including institutional setups that countries have put in place to identify, assess and manage risk in a more holistic way.

The focus of this chapter is on the management by public administration of risks that are external to public institutions themselves. Internal risks as they apply to individual public institutions or to the institutional system as a whole are not considered in detail here. For example, although risk management is an essential component of public procurement processes, it is out of the scope of this chapter. Similarly, anti-corruption, for which risk and vulnerability are key considerations for effective strategies, is not addressed here (see chapter 2 in this report for a treatment of risk in corruption).

The remainder of the chapter is constructed as follows. Section 4.2 provides definitions and general considerations on risk and examines how various risks are featured in the 2030 Agenda and SDG targets. Section 4.3 briefly surveys the factors that influence risk management in public administration. It provides a quick overview of paradigm changes in risk management in public administration over time. Recent trends in the institutionalization of risk management at the level of governments across the world are presented, as well as country examples of how risks are managed in public administration. The section then reviews the connections between risk management and the institutional principles of SDG 16 examined in this report. Finally, the section underlines challenges to risk management in public administration highlighted by experts who contributed to the chapter. Section 4.4 concludes.

## 4.2. Risk and the Sustainable Development Goals

This section briefly surveys the intersections of risk and the 2030 Agenda and the SDGs. After providing working definitions for this chapter, it examines broad considerations for risk management in public administration, which were used to inform the scope of the chapter. The chapter then reviews how risk is addressed in the text of the Agenda and the SDGs, and contrast this with an examination of risks-related issues in various SDG areas, based on examples as well as a review of the academic literature.

### 4.2.1. Defining risk and risk management

While risk has a clear definition in mathematics, finance and insurance,<sup>1</sup> in other disciplines the term is often interpreted more loosely. Due to the differences in risk across different fields (for example, systemic risk in finance versus natural disasters), different fields have developed their own interpretation of the concept, as well as diverse frameworks for thinking of risk and managing it.<sup>2</sup> For this reason, defining risk in a uniform way across the spectrum of human activities is challenging (see Box 4.1). Broadly speaking, risk can be defined as anticipated

### Box 4.1. The variety of interpretations of risk across disciplines and fields

Different disciplines and fields use different concepts in relation to risk, and sometimes use the same terms in different senses.

In engineering, risk is seen as the combination of the probability of an undesirable event and the expected harm that it may cause.<sup>3</sup> In insurance and information security, managing risk entails reducing exposure to loss and assessing the degree of threat.<sup>4</sup>

In economics, risk is often associated with inflation, economic growth rates, unemployment and per capita income.<sup>5</sup> Common financial risks include credit or default risk, liquidity risk, interest rate risks, foreign investment risks, equity risk and currency risk.<sup>6</sup>

In politics, risk is often defined as a shock that is unexpected and hard to forecast.<sup>7</sup>

In public policy, common types of risks include those linked with the stability of regulation, for example expropriation, contract breaches, regulatory capture and corruption.<sup>8</sup>

Source: Authors' elaboration.

variability, expected deviation from intended consequences or as the effect of uncertainty on objectives.

Risk management, in turn, is often described as the collection of coordinated activities to prevent, mitigate and control risk, create and protect value, and improve collaboration, information-sharing and trust in decision-making (for example, in ISO 31000<sup>9</sup>; and COSO ERM<sup>10</sup>). While the word “risk” is often associated with adverse events such as hazards, catastrophes, conflicts, disasters, crises or threats, it can also be perceived as a window of opportunity<sup>11</sup>. As such, managing risk may not only be about limiting potential damage. It also implies spotting potentials, reaping benefits and building resilience.<sup>12</sup>

In all fields, risk management is conceived as a sequence of stages, going from identification of potential risks to analysis and assessment to response (including mitigation, adaptation and restoration, reconstruction and rehabilitation) to monitoring and evaluation.<sup>13</sup> Each risk management stage is guided by a separate set of questions and can best be served by distinct (albeit often overlapping) methods, techniques and tools.<sup>14</sup> The nature of the risk under scrutiny, the specific phase of treatment, the availability of resources, regulatory requirements, administrative norms and sector specificities will ultimately determine the appropriate risk management techniques that can best support risk management. However, many risk management tools are employed in different fields.<sup>15</sup>

As described below, there is an extremely broad variety of risks across the spectrum of human activities covered by the Sustainable Development Goals. Risks can be categorised along several dimensions, including:

- (i) scale, from the micro-level (e.g. events affecting one individual or household) to the meso level (events

affecting one organisation or community) to the macro level. Some risks are global in scale;

- (ii) frequency and size of impact. This is a common distinction in insurance. The characteristics of each risk influence the ways in which it can be addressed by individuals, communities, the private sector, and the state.

This in turn informs considerations about whether the risk is avoidable or insurable; the extent to which it can be mitigated; whether it can be shared; and what role public administration should play in managing it. Distinct combinations of exposure-likelihood and magnitude-impact may require the use of diverse tools and risk management strategies. For instance, high-frequency, low impacts risks are more amenable to individual insurance than low-frequency, high impact ones. In such cases, public resources may be best channelled towards prevention or impact mitigation. In contrast, for extremely low probability and very high impact (catastrophic) events, governments may decide to put more focus on mitigation strategies and quick response and recovery approaches to crisis management.<sup>16</sup>

While the word “risk” conjures up images of disaster and reconstruction activities, in the context of SDG implementation it is important to acknowledge that risk management covers a broad range of policies and activities, ranging from political actions to policy changes in economic, social and environmental areas to legal and regulatory changes to technological innovation to education, information and investment. In fact, how a specific risk is addressed often depends on a layer of such provisions, which often have emerged at different points in time and are not based on the same assessments of risk. Box 4.2 illustrates this complexity, using the sector of agriculture and food (addressed under SDG 2) as an example.

#### Box 4.2. Examples of multiple responses to risks in the area of agriculture and food

Specific risks in food and agriculture have been addressed through a combination of means, including, among others, political actions, legal and regulatory changes, technological innovation and policy changes in economic, social and environmental areas.

Risks related to food safety and health have been addressed through food health standards and regulation (e.g. sanitary and phytosanitary standards, organic food standards); transparency requirements (e.g. food labelling, traceability requirements); mandated safety assessments for new varieties before commercialisation; and environmental regulations (e.g. for pesticides).

Food insecurity has been addressed through the improvement of food distribution systems; the creation of food banks and food stamps; price controls or subsidies for basic commodities; laws suspending exports of select basic commodities in times of shortage; and including food and nutrition as part of broader safety net programmes (e.g. school meals, food for education).

Rural poverty and poverty in smallholder communities have been addressed through agricultural subsidies; rural extension services targeting smallholders to increase productivity; national technology roadmaps; social certification schemes (e.g. Fair Trade).

Weather risk is addressed through a variety of means that include meteorological infrastructure and services provided to farmers; contingency funds for farmers; index-based insurance against weather risks (at the individual and macro levels); and agricultural research to develop more resistant crops.

Source: Authors' elaboration.

#### 4.2.2. Risk in the 2030 Agenda and the SDGs

The notion of risk and related notions such as resilience are ubiquitous in the 2030 Agenda and the Sustainable Development Goals. The Agenda mentions risk in relation to the health of the planet (paragraph 14), disaster risk reduction (paragraph 33), and peace and security (paragraph 35). Resilience is mentioned in association with these concepts as well as in relation to migration and refugee flows (paragraph 29). Risk and associated notions are also frequently used in the SDGs, as revealed by the wording of the targets.

A first layer of three targets include the word “risk”: target 3.8 (financial risk protection in health care), target 3.d (early warning and reduction of health risks) and target 11.b (disaster risk management and resilience).

A second layer of targets are framed in a way that emphasizes risk, in that they use concepts related to risk such as resilience, vulnerability, shocks, disasters, early warning, insurance, mitigation, adaptation, and adverse impacts. They comprise target 1.5 on building the resilience of the poor and reducing their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters; target 2.4 on resilient agricultural practices; target 8.1 on strengthening the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all; targets 9.1 and 9.a on resilient infrastructure; target 11.5 on economic losses caused by disasters; target 11.c on resilient buildings; target 13.1 on strengthening resilience and adaptive capacity to climate-related hazards and natural disasters; target 13.3 on improving education, human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning; target 14.2 on avoiding significant adverse impacts on marine and coastal ecosystems, including by strengthening their resilience.

A third layer of targets do not use generic risk-related terminology, but refers to specific risks in various sectors. They include: target 2.c on extreme food price volatility; target 3.3 on health epidemics; target 3.4 on non-communicable diseases; target 3.5 on substance abuse; target 3.9 on reducing deaths and illnesses from hazardous chemicals and pollution; target 6.3 on water pollution and hazardous chemicals; target 6.4 on water scarcity; target 14.3 on ocean acidification; targets 15.2 on deforestation, 15.3 on desertification, drought and floods, 15.5 on biodiversity loss, and 15.8 on invasive alien species; targets 16.4 on illicit financial and arm flows and 16.5 on corruption and bribery; target 16.a on violence, terrorism and crime; target 17.13 on global macroeconomic stability; and target 17.4 on debt stress.

Yet other targets refer to specific means of addressing political, economic, social, environmental and technological risks. This includes, among many others, targets on poverty, food security,

social protection systems, universal access to health care, access to financial services, migration and mobility, cities, and climate change.

Finally, many of the other targets have strong risk, vulnerability or resilience components attached to them. In particular, many targets associated with Goal 10 on inequality reflect the understanding of economic, social and political risks associated with inequality. Progress on many targets of Goal 16 also requires risk-based approaches, for example in the area of anti-corruption (target 16.5).

Classifying SDG targets in such a way is always subjective. In fact, organizations working on specific thematic areas or aspects of risk management and resilience building analyse them in different ways.<sup>17</sup> Yet, it is clear that risk-related notions permeate the SDGs. This stands in stark contrast with the Millennium Development Goals, the SDGs’ predecessors, where targets were rarely phrased in such a way. Through the choice of targets that they included in the SDGs, UN Member States signalled which risks they considered priorities, either for addressing at the international level, or because of their importance in national contexts. This, in conjunction with other internationally agreed development frameworks (for example, the Samoa pathway for small island developing States), can help countries as they consider how to manage risk in the context of SDG implementation.

As a whole, the multiple linkages made with risk in the Agenda and the goals and targets contribute to an enhanced awareness of risk across the whole range of areas of sustainable development, and as a consequence to higher sensitivity to risk management considerations in public administration. However, one aspect that the SDGs do not explicitly emphasize (but help bring to light due to their broad scope) is the interlinkages among various risks. Work done in various disciplines, especially in Earth sciences, has shown that risks at various levels intersect, overlap, and are linked by causal chains.<sup>18</sup> This should inform governmental and public administration frameworks and strategies for addressing risk.

### 4.3. Risk management in public administration

#### 4.3.1. Risk management in public administration: general considerations

Risk management in government and public administration is distinct from that in the private sector. The pursuit of public interest as opposed to profit-making motive, for instance, renders risk management in public administration less about cost minimization and more about benefit maximization for all.<sup>19</sup> In addition, low tolerance for failure in the public sector drives attitudes toward risk that are different from those prevailing

in the private sector. In public administration, objectives such as citizen protection, well-being and prosperity are central, implying a strong role for strategic risk management, including contingency planning, emergency preparedness, as well as crisis and disaster management.<sup>20</sup>

Public administration plays a central role in managing risk across all SDG areas, as risk manager, regulator, or in other roles. States usually manage a range of risks directly. For instance, most public emergency agencies and plans have cutting-edge risk management instilled in them, as in Japan's Fundamental Plan for National Resilience (2014), a whole-of-government integrated plan to overcome risk to achieve sustainable growth across generations.<sup>21</sup> States also take on part of the risks that are managed by other actors in a wide range of activities, ranging from finance to trade to natural disaster management. This encompasses the provision of guarantees and insurance products to private firms or individuals, and also includes the role of the State as insurer of last resort for catastrophic events. The role of the State as regulator puts public administration in a position to oversee risk management in virtually all sectors. Regulatory agencies are often specifically required by law to perform risk assessment before product launch or service initiation in areas such as public health, food safety, waste management, water and sanitation, and critical infrastructure.<sup>22</sup> Even when this is not the case, regulatory impact assessments in general may include risk components, particularly when those are contained in relevant legislation.<sup>23</sup>

In the context of the SDGs, an overarching question for governments is how they can most effectively manage risk across the range of sectors where they arise. This encompasses the following questions:

- (i) What are major uncertainties and risks across SDG areas?
- (ii) 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?
- (iii) How developed are risk-informed perspectives in public administration practice in different SDG areas at the national level?
- (iv) Are there causal linkages, synergies and trade-offs 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?
- (v) How do alternative strategies for managing risk affect vulnerable groups, and what are good practices in terms of including vulnerable groups in risk management processes?

Some countries are more vulnerable to specific risks than others.<sup>24</sup> In addition, because of their unique geographic, social,

economic and political circumstances, countries face different combinations of risks. Hence, from a macro perspective, the "risk portfolios" vary across countries. In each country, the social consensus on tolerable levels and best ways to address specific risks is also idiosyncratic.<sup>25</sup> Therefore, countries will apprehend risk management in diverse ways. For instance, the perception and assessment of catastrophic flood risk in the Netherlands, which as a country is highly vulnerable to this risk, will be different from those in countries where flood risk is less important. Netherlands' flood diversion system is designed to protect against 1:1250 year floods, as opposed to the usual 1:100 year floods, a statistical designation to refer to events occurring only once in a century on average.<sup>26</sup>

Cost and benefit analyses may allow policy-makers to reflect upon the best ways to confront the more and less urgent risks in their own national contexts and resource endowments. Countries may decide to scan for risks that are as far out as thirty years, prepare for catastrophes that may happen once in a hundred years, or opt for much shorter horizon scanning of six months to a year. In each case, the ensuing risk management framework will be distinct, some favouring agile response mechanisms that target impact mitigation, others vying for systemic resilience, and still others falling somewhere in between.<sup>27</sup>

Decisions about how to manage risk in public administration are influenced by institutional capacities. Depending on those, policy-makers may decide to manage certain risks directly, while going for mitigation or transfer of others;<sup>28</sup> capacity in public administration may also influence the balance between preparedness and prevention as opposed to rehabilitation and reconstruction in disaster management activities. Importantly, in some cases, decisions regarding risk management are also influenced by the prevailing institutional arrangements between the public and private sectors. For example, one of the major consequences of privatization of infrastructure is the existence of explicit or implicit risk-sharing arrangements between the two. In practice, the public sector often remains de facto responsible for the protection of those assets.<sup>29</sup>

Variations across risk management frameworks across countries are also influenced by historical circumstances. Examples later in this report show that innovative risk management practices in public administration often initially develop in priority risk areas, later expanding to other areas or evolving into more integrated ways of managing risk across sectors. Often, risk management becomes part and parcel of public administration and governance in countries and contexts where prior exposure to catastrophes and hazards instigate a process of learning and preparedness. Crises of national, regional and global nature also prompt governments to update their risk management frameworks in specific sectors. For instance, an uptick in risk management by public administrations across the world was manifest following the 2007-2008 financial crisis.

### 4.3.2. Paradigm changes in risk management in public administration

Risk management in public administration has a long history, even if it was not always coined as such. Efforts of early States in Mesopotamia and Egypt to create irrigation systems for food production were among the first manifestations of risk management at large scales by governments, in this case to mitigate weather risks and enhance food security. The management of weather risks has remained a central preoccupation of governments to this day.

In recent times, risk management approaches were developed in areas where governments had to take on a large portion of the costs of catastrophic events - for instance, financial crises. Risk management frameworks in the financial sector, supported by transparency and accountability policies, have continuously evolved as the sophistication of financial systems increased.<sup>30</sup> More recently, environmental risks, including those associated with pollution of various types, became an important area of government intervention, and mandated transparency played an important role in governments' responses to pollution issues, in combination to other policies. Natural disasters, climate change and other sectors have received increasing attention over the past two or three decades, and governments have developed an array of instruments to address associated risks.<sup>31</sup>

Public institutions and public administration processes to manage risk have evolved over time, driven both by broader paradigm changes in governance and by the development of knowledge and practice of risk management in different fields.

Traditional ways of thinking about risk in public administration tended to envision risk as resulting from a breakdown in standard operating procedures, often due to shortfalls in compliance. The typical prescription for managing risk was to focus on legal and organizational aspects, with emphasis on administrative guidelines, codes of conduct and hierarchical reporting lines. Risk viewed in such a way was addressed through continuous checks and controls, as well as internal auditing based on operational standards.<sup>32</sup> Decision-making processes relating to risk management were managed by individual agencies or departments with few interconnections among them.

With the rise of New Public Management and its emphasis on performance and results, the notion of risk expanded to cover strategic threats and opportunities. Methods for managing risk used in private sector organizations (for instance, the Enterprise Risk Management (ERM) framework) gradually made inroads into public administration. From the 1990s onward, capturing potential gains and taking calculated risks became part of the public management discourse of reinventing government<sup>33</sup>. Risk was understood as a general threat to the successful operation of public administration<sup>34</sup>. Regulation was seen as a possible antidote, provided that it was swift, effective and

transparent. New institutional arrangements started to emerge in the public sector, such as risk review boards made up of independent technical experts, interagency risk commissions and multi-risk taskforces, to name a few<sup>35</sup>.

In the twenty-first century, as new forms of governance started to be advocated in the public discourse (for instance, networked governance), the paradigm for risk management in public administration also evolved. As the notion of co-production gained traction, there was increased focus on state-society dialogue, stakeholder engagement and multiple and joined accountability. Emphasis was put on creating risk-aware cultures in public administration, as well as on managing risk in a cross-cutting way across organizational units.<sup>36</sup> More recently, the emergence of risks linked with cyber security and other digital developments again led to a reconceptualization of approaches to risk management.

The perception of intersecting and compounding risks led to the development of Integrated Risk Management (IRM) in the public sector<sup>37</sup>, backed by data-driven, concerted approaches to governance. Risk management, in its integrated form, went beyond merely interconnecting different risk factors. It was about reviewing them holistically as part and parcel of national developmental frameworks. Risk management tools were also enhanced to tackle discretion in public-private partnerships<sup>38</sup>, offering solutions for shared accountability frameworks and joined risk management in networked governance. Striking a balance between privacy and security became a major policy concern, particularly in partnership arrangements enveloping areas germane to national security and public safety.<sup>39</sup>

Changes in information and communication technologies have driven changes in practices of risk management. E-government has dramatically changed the way government agencies disseminate and share information. The open data movement has promoted interoperability in regulatory risk management<sup>40</sup>. Governance, risk and compliance (GRC) approaches to risk management synthesized the lessons learned in managing risk across different lines of work and policy domains, by automating and deploying (often cloud-based) information technology management systems, governance compliance dashboards,<sup>41</sup> and spatial decision support systems<sup>42</sup> making use of geospatial information technology, wireless sensor networks and collaborative data delivery systems.<sup>43</sup> These technologies offered new possibilities for cutting costs, avoiding duplications, creating early warning systems, strengthening multi-stakeholder engagement and putting foresight at the core of public agenda setting.

At the same time, there was a multiplication of international norms, standards and guidelines for risk management in various sectors.<sup>44</sup> In most countries, this was a strong factor in the development of risk management frameworks, as described below.

### Box 4.3. International norms, standards and guidelines for risk management

Guidelines include those published by UNECE (2011, 2016); the European Commission's Risk Assessment and Mapping Guidelines for Disaster Management from 2010; the European Commission's Risk Management Capability Assessment Guidelines (2015); IMF's guidelines for fiscal risk disclosure and management; OECD's Guidelines for Resilience Systems Analysis; and OECD's Risk management principles and guidelines for policy design in agriculture.

Directives and Conclusions include: the European Council Conclusion 8068/1/11 of April 2011 on "further developing risk assessment for disaster management within the European Union". It determines that, by the end of 2011, each Member State must start the elaboration of its national disaster risk assessments through multi-hazard scenarios; Council's Directive 2007/60/EC on the assessment and management of flood risks; 2008/114/EC, which requires Member States to identify the European Critical Infrastructure Elements. Recommendations include the OECD Recommendation on the Governance of Critical Risks.

International standards include those from the ISO 31000 series on risk management, for example ISO 31010 on risk management-risk assessment techniques, and COSO ERM, as well as standards that address risk-related issues in other areas (for example, ISO 9001 on quality management and ISO 27001 on information security management).

Examples of networks and platforms are UNEP's knowledge repository on risk exposure<sup>45</sup> and UNEP-GRID and UNISDR's Global Risk Data Platform.<sup>46</sup>

Source: Authors' elaboration.

Because of its explicit focus on risk and connected notions, the 2030 Agenda for Sustainable Development has provided an impetus for mainstreaming risk-informed decision-making and resilience thinking in national development planning. The emphasis of the SDGs on preventive approaches as an integral part of sustainable development provides an opportunity to further expand risk management methods beyond traditional areas such as financial risks and disaster management. The concept of Integrated Risk Management (IRM) has gradually been connected with complexity thinking and resilience building approaches in public administration. Bottom-up, endogenous risk management modalities based on behavioural incentives have been added to more traditional approaches focusing on expert-led technical modelling<sup>47</sup>.

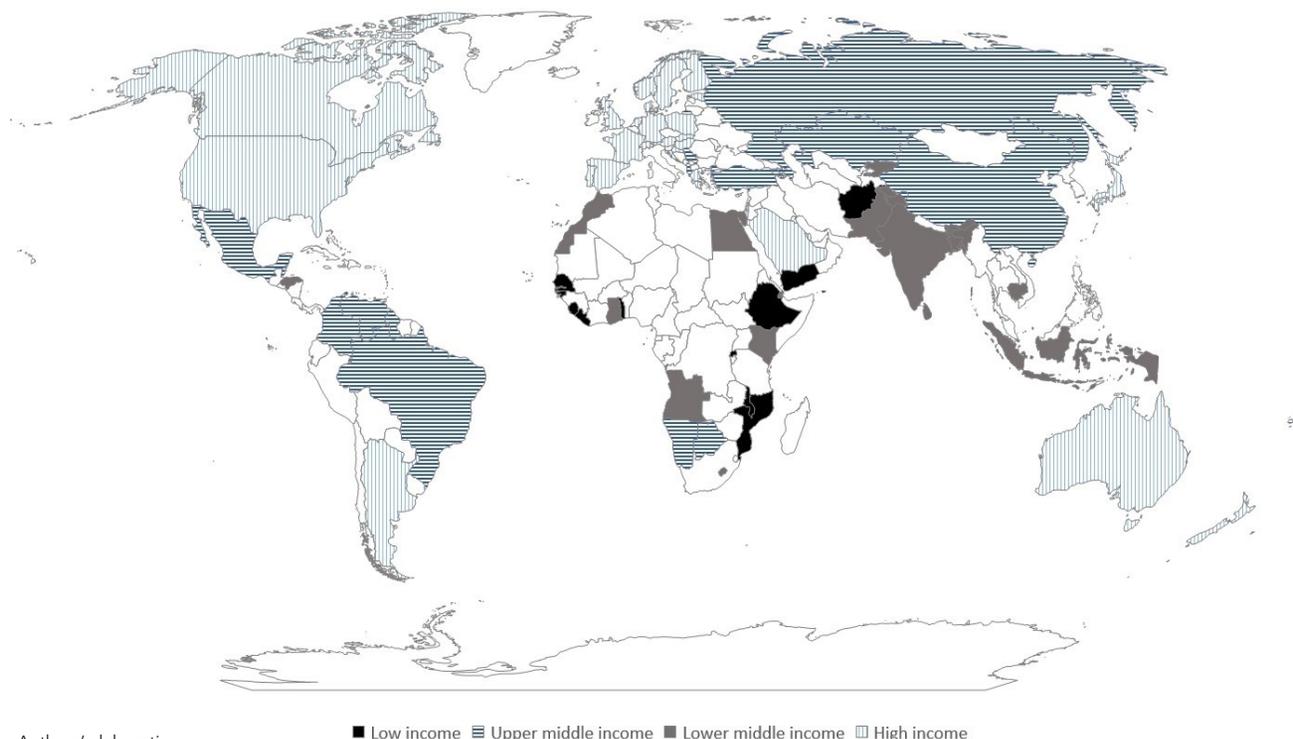
### 4.3.3. Trends in institutionalization of risk management in government

In order to examine institutional arrangements for risk management in public administration at the national level, desk research complemented by expert interviews was conducted on a sample of 83 countries (see Figure 4.1).<sup>53</sup> The main questions for research were: (i) whether the national government has a national risk assessment or related initiative covering a broad range of risks for sustainable development; and (ii) what are the most prominent public institutions in charge of managing risks. Highlights from this limited review are presented below.

### Box 4.4. Multiple conceptual frameworks for risk management in the context of SDG implementation

Risk management in relation to SDG implementation has often been associated with compliance, regulation, integrated policy making, and resilience, borrowing elements from risk management paradigms and frameworks such as Enterprise Risk Management (ERM)<sup>48</sup>, Governance, risk and compliance (GRC)<sup>49</sup>, Integrated risk management<sup>50</sup>, fragility frameworks<sup>51</sup> and resilience management.<sup>52</sup>

Source: Authors' elaboration.

**Figure 4.1.****National risk assessment in the world: A sample of 83 countries**

Source: Authors' elaboration.

**Table 4.1.****Liberia's lead managing agencies and alternates for specific risks**

Hazards/Incidents	Lead Agencies	Alternates
Flood	Ministry of Internal Affairs	Environmental Protection Agency, Ministry of Mines and Energy, Ministry of Health and Social Welfare, Liberia National Red Cross Society
Refugees	Ministry of Internal Affairs, Liberia Refugee Repatriation and Resettlement Commission	Ministry of Internal Affairs, Liberia National Red Cross Society
Pest, Drought	Ministry of Agriculture	Ministry of Health and Social Welfare, Environmental Protection Agency
Wildfires	Liberia National Fire Services, Ministry of Justice	Other service providers such as the National Port Authority
Epidemics and other health hazards	Ministry of Health and Social Welfare	Liberia National Red Cross Society
Terrorism	Ministry of Defense, Ministry of Justice	Ministry of National Security, National Security Agency
Desertification, environmental degradation, landslides	Environmental Protection Agency, Ministry of Lands, Mines and Energy	Ministry of Agriculture, Forestry Development Agency
Oil spills, exploration at sea	Ministry of Mines and Energy, Environmental Protection Agency	Ministry of Mines and Energy, Ministry of Agriculture, Ministry of Internal Affairs, National Maritime Authority
Chemical and industrial accidents	Environmental Protection Agency, Ministry of Mines and Energy	Ministry of Health and Social Welfare, Ministry of Mines and Energy, City Corporation, Ministry of Agriculture
Economic shocks	Ministry of Commerce and Industry	Ministry of Agriculture, National Fisheries and Aquaculture Authority, Ministry of Internal Affairs
Road, aviation and rail disaster	Ministry of Public Works, Ministry of Transport	Ministry of Mines and Energy, Ministry of Health and Social Welfare, Environmental Protection Agency, Ministry of Public Works

Source: Liberia's National Disaster Risk Management Policy.<sup>54</sup>

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. As an illustration, Liberia's National Disaster Management Policy identifies lead managing agencies and alternates for various types of risks related to disaster (Table 4.1). This illustrates the institutional complexity of managing the full range of relevant risks.

Line ministries and public agencies often have their own risk plans and officers in charge of managing sectoral risk. Such agencies include those in charge of customs and tax administration, budgeting and public debt management, border security and control, and other regulatory agencies in the fields of environment, urban planning, infrastructure, science and technology, food safety and quality, electric safety and energy production, public healthcare systems and medical waste management, among others. Turkey, for instance, addresses economic and financial risk through the recently established Risk Analysis Units (2012) under the Directory of Risk Management and Control in its Ministry of Commerce. Risk Management is also part of the Strategy Formation Directorate in the Ministry of Finance. Turkey has a separate National Disaster and Risk Management Office under the Presidency. Each Ministry, including the Ministry of Tourism for instance, carries out detailed and regular risk analyses.

Across all countries included in the sample, financial risks are managed by the Ministry of Finance for purposes of public finance and debt management. Similarly, national security and public safety are often handled by the Cabinet under the President or Prime Minister's Office, sometimes through the National Security Council, or Ministry of Defence or Ministry of the Interior with focus on civil protection.

Natural catastrophes and technological risks are often managed by Ministries of Environment, of Emergencies, or Ministries of Disaster, which often take on the task of carrying out integrated risk management activities that go beyond the environmental arena and address a large range of risks to the safety and wellbeing of citizens. For example, Ministries of Disaster Management were found to handle comprehensive risks in Rwanda and Ethiopia, and so were ministerial-level national commissions in Honduras and Indonesia.

Emerging risks such as cyber risk may be handled separately by a National Security Council, the Ministry of Defence or another specialized agency. Many countries have Chief Risk Officers or similar government offices and officers under their Ministries of Finance to handle financial risks or to handle supply security (Finland, Turkey, United States, Singapore, France). Others also have similar risk related offices and programs in their Ministries of Environment, Infrastructure, Industry, Water and Sanitation or other sectoral ministries (for example, France).

Depending on the unique sets of threats they face, countries have put in place national risk management and protection programmes and plans of action focused on areas such as human trafficking (Belize), water and sanitation (Afghanistan, Barbados), the National AIDS Authority (Cambodia), the National Tuberculosis Program (Eswatini), the National Food Security Programme (Ethiopia), the Employment, Labour and gender risk assessments (Liberia), or other protection schemes and safety nets (Disability Plan of Action in Eswatini). Small Island Developing States (SIDS) may have a Chief Environment Officer who manages more than just environmental risks but also their social, economic and political repercussions (Belize, Seychelles). Most of them often have full-fledged natural disaster risk management policies (East Timor) or committees (Sri Lanka).

The adoption of risk management frameworks in national public administration in specific sectors is influenced by international law and normative guidance produced by international institutions. For instance, the work of the Basel Committee has spurred the adoption of prudential regulation frameworks at the national level in most countries.<sup>55</sup> The European Union requires national risk assessments in order for member states to qualify for certain types of funds.<sup>56</sup> The Sendai Framework for Disaster Risk Reduction and the Financial Action Taskforce (FATF) play similar roles in disaster and anti-money laundering. For instance, most countries in the sample were found to have anti-money laundering and counterterrorism financing national risk assessments, based on FATF recommendations.<sup>57</sup> Similarly, in our sample, countries that are members of intergovernmental or supranational organisations, such as the Organisation for Economic Cooperation and Development (OECD), the Commonwealth and the European Union were found to have a higher likelihood of carrying out national risk assessments.

Regional and interregional organisations providing financing, knowledge management and capacity development also have a significant influence on the adoption of risk management frameworks in national public administration. South-South and North-South cooperation and interregional platforms of sectoral risk reduction and management provide stimulus for national governments to adopt and implement risk management frameworks. Examples include the Platform for Agricultural Risk Management in Africa, the African Risk Capacity, the Caribbean Catastrophe Risk Insurance Facility, the South-east Asia Disaster Risk Insurance Facility launched earlier this year, and others. The European Commission has platforms such as the European Foresight Platform (EFP), which brings together risk professionals and communities of practice. EFP aims to build a global network of communities and professionals to share knowledge about foresight, forecasting and other methods of future studies involving uncertainty and risk.<sup>58</sup>

In addition to institutionalizing risk management in public administration at the sector level, many countries have also adopted more holistic, integrated approaches. This is based on the recognition that risks can be overlapping, and that siloed approaches that focus on addressing individual risks may create risks in other areas.<sup>59</sup> Such approaches adopt a broad definition of risk, even when addressing a specific sector. This includes mainstreaming of cross-cutting issues, such as gender equality, in other areas of risk management, as in Liberia (see section 4.3.4 below). An important step to integrated approaches is the coordination of risk assessments across a range of risk. Mexico provides an example of this with its National Atlas of Risk (see section 4.3.4 below). France also offers an interactive risk map, which allows the public to see natural and technological risks at the level of administrative subdivisions.<sup>60</sup>

Many countries have moved to producing national risks assessments, where all important risks are assessed in a single process.<sup>61</sup> Thirty countries out of 85 in our sample were found to conduct national risk assessments. Those vary widely across countries in terms of scope, time horizon, methodology and dissemination (see Box 4.5). Some countries report that they are in the process of building a national risk assessment system (Saudi Arabia - National Transformation Program Saudi Vision 2030; Spain - National Program of Reforms 2014, Slovakia).<sup>62</sup> Countries that do not have an integrated or regular national risk assessment may implement advanced risk analysis tools and assessment models overall or in various sectors, particularly finance and the environment. For example, South Korea has a sophisticated data-based system to communicate information on risk and issue warnings on potential disasters.<sup>63</sup> Other countries have evolved comprehensive legal and regulatory frameworks for risk management in public administration. Bangladesh includes risk management under its National Good Governance program and National Integrity Strategy 2018. Serbia has an extensive legal framework for emergency and disaster risk management.<sup>64</sup>

Countries that run national risk assessments or have integrated risk management platforms often have one or more units, offices, departments or inter-ministerial commissions or working groups reporting to the President, vice-President or Prime Minister's Office (19 countries were found to have such arrangements), either directly or indirectly through specific ministries or departments or through a National Security Council.

The needs for integrated approaches to risk management have translated into a range of institutional approaches at the national level. Several countries have established National Risk Boards, which are permanent or ad hoc committees that analyse and assess synergies and trade-offs among risks and make recommendations to the Government. Such Boards exist in the Netherlands, Singapore, the United States and the United Kingdom, among others.<sup>66</sup> The United Kingdom has recently introduced the position of Minister for Government Resilience and Efficiency.<sup>67</sup> Morocco has been reported to consider establishing a National Chief Risk Officer position.<sup>68</sup>

All countries, regardless of the institution(s) in charge of performing a national risk assessment, also have intersectoral and cross-agency working groups, committees, commissions and taskforces involved in processes of risk management. The nature and depth of involvement of non-state actors in the design and implementation of national risk assessments varies from country to country.

The Ministry of the Interior is a commonly found lead institution for the production of national risk assessments (Bahrain, Cyprus, Estonia, Finland, Germany, Hungary, Republic of Korea, Morocco, Portugal, Saudi Arabia, Serbia). In other countries, this task belongs to the Ministry of Defence, Public Safety, Civil protection, or equivalent (Argentina, Canada, Denmark, Kyrgyzstan, New Zealand, Senegal, Sweden, Switzerland, Togo). In Norway, the national risk assessment is managed by the Ministry of Justice.

#### Box 4.5. The variety of national risk assessments

National risk assessments (NRAs) are a relatively new phenomenon, which has gained traction in the past five years, even though some countries have been undertaking similar exercises since the beginning of the 2000s. Often, national risk assessments are undertaken periodically, anywhere from every six months to every three or more years.

NRAs are very diverse. Depending on the context of countries, they include different sets of risks, with some types of risk covered only in some countries (such as nuclear threats, financial crises, and climate change). Some assessments plans cover transboundary and cross-cutting risks while others do not. Many include vulnerability and capability assessments, including a focus on longer term resilience building.

Some NRAs are quantitative and forward looking, while others are more qualitative and rely on analysis of the country's history. The scope of future risk analysis within national risk assessments also differs, ranging from six months or a year to 30 to 100 years.

In some countries, the assessments are confidential; in others, the level of confidentiality in the design, implementation and dissemination of results to a variety of stakeholders (including the broader public) varies.

Source: Authors' elaboration based on OECD, 2018.<sup>65</sup>

### Box 4.6. Lead government agency for risk management: Public Safety Canada

Public Safety Canada was created in 2003 to ensure coordination across all federal departments and agencies to protect Canadians against threats ranging from terrorism, cyberattacks, nuclear weapons to crime and gang violence and natural hazards and environmental disasters. Public Safety Canada has an Interdependent Risk Assessment Working Group, which meets regularly to review risks through a common set of principles. In addition, risk management is conducted throughout the federal government in accordance with the Treasury Board Framework for the Management of Risk, which is currently under review, the International Standard 31000 and the Canadian Standards Association Implementation Guide to CAN/CSA-ISO 31000: Risk Management Principles and Guidelines (SCC-CCN 2018).

Source: Standards Council of Canada (2018).

Numerous practitioners and scholars have advocated for the creation of a national Chief Risk Officer position in government.<sup>69</sup> In Singapore, the two Deputy Prime Ministers handle respectively national security and financial risks. In Japan, the Deputy Prime Minister oversees all types of risks. As a whole though, very few countries seem to have a Chief Risk Officer.

Many countries have combinations of the above institutions. New Zealand, for instance, recently introduced a National Risk Unit in the department of the Prime Minister and Cabinet to manage security risk. This is in addition to the country's Domestic and External Security Coordination Group under the Prime Minister's Office, to risk management activities carried out in its Department of the Environment for climate change and environmental hazards, and to the implementation of the national emergency management policy by its Department of Internal Affairs.<sup>70</sup>

### 4.3.4. National examples of risk management in public administration

This section illustrates how risk management is institutionalised in public administration in various countries. The goal is to illustrate a variety of techniques and tools employed in managing diverse risk types in different SDG or nexus areas.

#### Incorporating gender perspectives in risk management

Risk is seldom contained in silos, nor should its management be. In particular, social risks of various nature tend to compound with economic and environmental risk. For instance, the United Nations Commission on the Elimination of Discrimination against Women (CEDAW), in its General Recommendation No. 37 on Gender-related dimensions of disaster risk reduction in the context of climate change of February 2018, recognises that

### Box 4.7. Liberia's National Disaster Risk Management Policy

Adopted in 2012, Liberia's National Disaster Risk Management Policy adopts a cross-cutting, all-hazards approach. It considers likelihood and vulnerability analyses, exposure assessment, capacity development and resilience building objectives across as diverse sectors as health, education, food, energy, transportation, housing, infrastructure, construction, finance, cultural heritage, water and sanitation, land management, marine and coastal ecosystems.

Gender and Disaster Risk Management constitutes one of the four policy principles undergirding the Policy. It mandates all government activities to proactively and consciously include women and vulnerable groups in disaster risk management, specifically by (i) strengthening their security in crisis, (ii) expanding their participation and leadership roles in emergency response operations, conflict prevention and post-disaster reconstruction, (iii) promoting gender equality through gender-disaggregated data, needs assessment and impact analysis, (iv) ensuring gender responsive recovery, and (v) promoting social change through disaster risk management capability building.

The Policy also embraces gender as part of its five key policy areas supporting all policy principles. Development of gender sensitive national disaster management policies, involvement and empowerment of women along with other groups that might otherwise be sidelined in disaster risk decision-making, including in Disaster Risk Assessment Teams, and mainstreaming of gender in disaster risk reduction activities in urban and rural settings are some of the ways in which priority areas of the Policy shape the institutional basis of Liberia's gender-sensitive disaster risk management. Across sectors and risks, women and female-headed households are made active actors of the design, implementation, monitoring and evaluation of risk management systems and processes.

Source: Author's elaboration.

situations of crisis exacerbate pre-existing gender inequalities and also compound intersecting forms of discrimination against women (article 2). The Recommendation offers guidance in this regard, building on international law.<sup>71</sup> In particular, the guidance underlines the imperative to uphold women's human rights at all stages of disaster risk management, including prevention, mitigation, response, recovery and adaptation (article 16); and also refers to areas of the SDGs that have strong linkages with gender equality, climate change and disaster reduction (article 22).

Illustrating this, Liberia, listed as a country in fragile situation by the World Bank<sup>72</sup>, presents an interesting case in creating interlinkages between gender empowerment and disaster risk management in post-conflict settings. Following a long civil war and conflict that came to an end in 2003, Liberia was then swept in 2013 by the Ebola virus.<sup>73</sup> Liberian public institutions have been under constant strain to keep delivering services during emergency. Liberia's National Disaster Management Policy, adopted in 2012, emphasises women's full participation in the development and management of all disaster risk management policy and action<sup>74</sup>.

### **Mobilising technology and data for national risk management**

Technology is a critical enabler of risk management, across all types of risk. Information and knowledge management

technologies support all stages of the risk cycle, from analysis to prevention to reconstruction to monitoring. Technologies used to manage risk in one sector can spread to risk management in other sectors. Depending on a country's context, the use of specific technologies may start in a sector where risk is deemed most critical (for instance, food risk management in Ethiopia). At other times, national and sub-national hazard assessment and civil protection strategies can emerge symbiotically based on a gradual expansion of data management and information and communication technologies (for example, Mexico's National and sub-national Atlas of Risks).

Advanced technology is used to manage risks associated with malicious use of technology itself. Emerging digital and cybersecurity risks are a case in point. In September 2018, the United States Government established the National Risk Management Centre (NRMCC), as a subcomponent of the National Protection and Programs Directorate of the Department of Homeland Security. NRMCC has evolved out of the former Office of Cyber and Infrastructure Analysis. Its mandate is to advance the understanding of emerging cyber-physical risks. The NRMCC plays a key role in the Department's work to implement Presidential Policy Directive 21, which calls for integrated analysis of critical infrastructure, and Executive Order 13636, which identifies critical infrastructure where cyber incidents could have catastrophic impacts on public health and safety, the economy and national security.<sup>75</sup>

### **Box 4.8. Ethiopia's Food Security Early Warning System**

The second most populous nation in Africa and fastest growing economy in the region, Ethiopia aims to reach lower-middle-income status by 2025. With Ethiopia's introduction of the Productive Safety Net Programme (PSNP, 2005) as part of its National Food Security Programme (2004), the government has experienced a paradigmatic shift from reactive crisis management to proactive risk management.

PSNP is the largest social protection programme in Sub-Saharan Africa outside of South Africa. It serves over 7.8 million Ethiopians in 319 woredas (third-level administrative district) across 8 regions. At its apex is a risk financing mechanism which includes a food security early warning tool, LEAP (Livelihood, Early Assessment and Protection) developed in 2008 by the Government of Ethiopia in cooperation with the World Food Programme.

LEAP converts satellite and agro-meteorological data into crop or rangeland production estimates and derives livelihood protection requirements. It quantifies the financial resources needed to scale up PSNP in case of a major drought. It uses satellites, through GEONETCast, a global network of satellite-based data dissemination systems. It integrates climate risk management frameworks with risk transfer mechanisms.

LEAP complements early warning systems implemented by the National Disaster Risk Management Commission. Leading institutions are assigned to specific hazards at all administration levels. Lead sectoral risk managers are appointed in the Ministry of Agriculture, Environment and Forestry, Health, Water, Irrigation and Energy, Federal Affairs, Transport, Mines, Defence, Urban Development, Housing, Construction, Education, and City administration.

Source: <http://www.dppc.gov.et/Pages/leap.html>.

### Box 4.9. Mexico's National Atlas of Risks

Mexico's National Programme of Civil Protection, SINAPROC (2014-2018) integrates municipal, regional, national level risk data; and offers prizes in risk management and civil protection.

Mexico uses an elaborate National Atlas of Risks to visualize risks across the nation. Developed and implemented in partnership by the National Center of Disaster Prevention, National Seismology Service, the Earth Observation Laboratory, and the National Oceanic and Atmospheric Administration (NOAA), the Atlas includes hazard maps by type of risk (geological, hydrometeorological, chemical-technological, sanitary-ecological, space, and socio-organizational), as defined by the General Law on Civil Protection.

The Risk Atlas offers historical maps to see the evolution of risk and progression in the effectiveness of risk response through time and across localities. The system allows a probability assessment including tools for scenario building. It lets the user define the exposed area to see its approximate population, the number of centers of work, health, hotels, banks, airports, dams, livestock, crops, and a host of other variables related to risk and vulnerabilities. The National Institute of Statistics, Geography and Information (INEGI) provides the data.

The Atlas and the interactive maps are not only about environmental and natural risks. Public service disruptions, accidents, critical infrastructure related hazards, terrorism and related threats are also covered. It provides an additional visualization tool to illustrate publicly declared emergencies and disasters.

Source: <http://www.atlasnacionalderiesgos.gob.mx/>

### Managing environmental risk at national and regional levels

Risk-based decision making is increasingly used in environmental management, and risk-based regulation has emerged as a tool of natural resource management (e.g. for allocation of water abstraction licences, urban planning and construction controls, flood risk management, air and water pollution control, waste management, mining and hydrological fracking, etc.). Both disaster and emergency management and climate risk management imply cross-cutting risk analysis connecting several sectors, within and beyond ecosystem management.<sup>76</sup>

At the national level, the Netherlands' Delta Commission Plan<sup>77</sup> and New Zealand's Coastal Hazards and Climate Change Guidance for local government are advanced examples of flood risk management methodologies<sup>78</sup>. Similar risk-based decision-making processes exist in Asia, including in Bangladesh, Thailand, Vietnam, and other countries. Notable examples of disaster and emergency management successfully including climate risk assessment and spilling over to comprehensive and integrated national risk management programs come from Bangladesh and Indonesia (see Box 4.10).

### Box 4.10. Indonesia's integrated disaster risk management framework

Indonesia, South-east Asia's largest economy, sits on the Pacific Ring of Fire, a string of volcanoes and sites of seismic activity around the edges of the Pacific Ocean. The country is also prone to other natural disasters such as landslides, flood and forest fires. The country has a comprehensive national disaster risk plan based on a robust legal framework and whole-of-government and whole-of-society approaches in its implementation. Led by the National Agency for Disaster Management (BNPB), the plan includes many types of risks (natural, environmental, social, technological, but not economic/financial) and uses a variety of tools including systematic data collection/analysis such as DIBI (Database of Disaster Management), LAPOR! mobile application (complaint, alarm and alert system), REPORT!, and the National Public Service Complaint Management System (SP4N).

BNPB is a ministerial-level independent agency legally mandated to coordinate all contingency, preparedness, mitigation, prevention, disaster management training and disaster risk reduction, assessment and mapping, including in the 'pre-disaster' phase. BNPB includes representatives from the Department of Home Affairs; Social Affairs; Public Works; Health; Finance; Transportation; Energy and Mineral Resources; National Police; and Army. Indonesia has also recently adopted its National Disaster Risk Financing Strategy for financial protection against natural disasters. Local governments affected by natural disasters can draw on a national fund. The central government may reinsure risks with either global or local insurance players.

Source: Authors' elaboration.

From a regional perspective, the UNDP's Pacific Risk Resilience Programme triangulates climate risk management with disaster risk reduction and national sustainable development planning.<sup>79</sup> The African Risk Capacity (ARC) assists Member States to improve their capacities to better plan, prepare and respond to extreme weather events, natural disasters and epidemics. The Caribbean Catastrophe Risk Insurance Facility is the world's first multi-country risk pool to have successfully developed parametric policies to limit the financial impact of hurricanes and earthquakes.

### 4.3.5. Connections between risk management and the institutional principles of SDG 16

The institutional principles of SDG 16 examined in this report all are highly relevant to risk management in public administration. The connections are multiple, and apply at different stages of the risk cycle (see Figure 4.2).

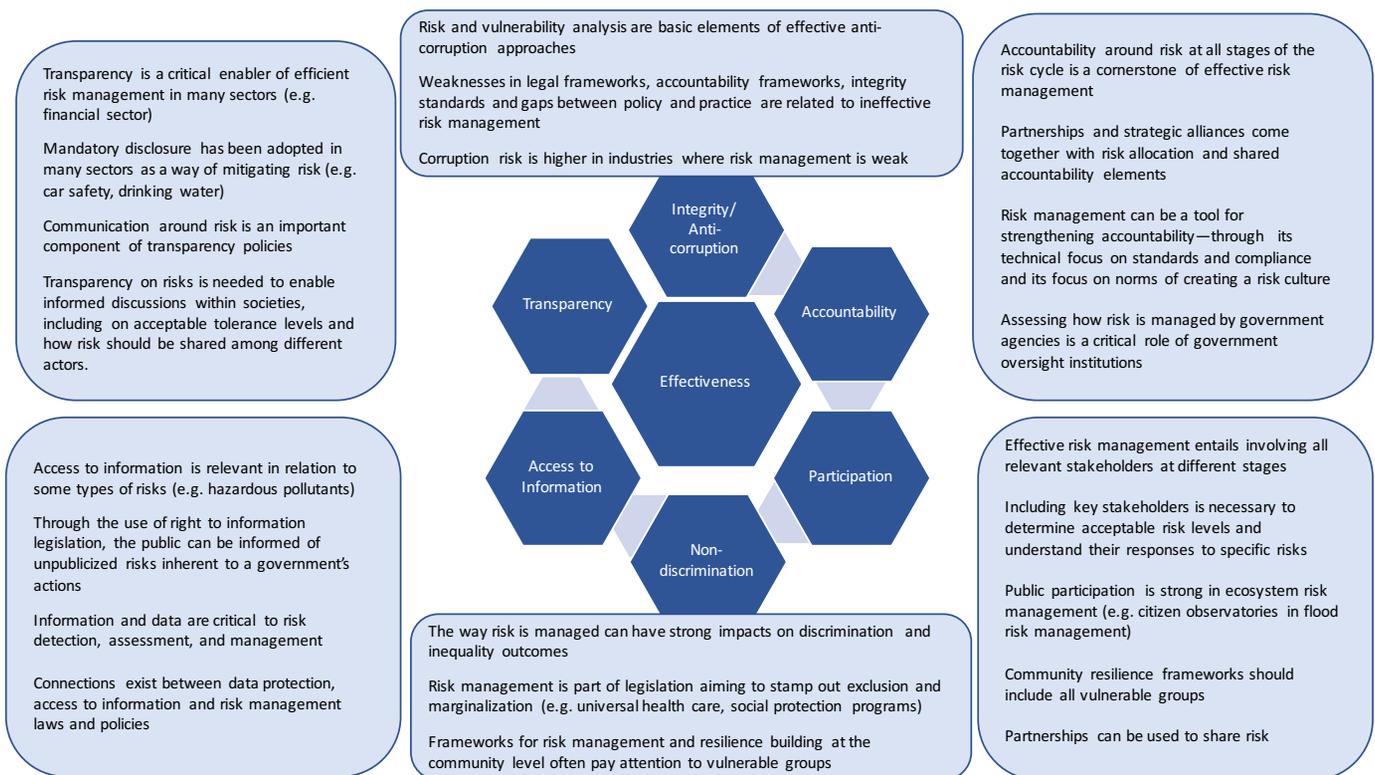
Transparency is a critical enabler of efficient risk management in many sectors, with the financial sector being perhaps the most prominent example. Mandatory disclosure has been adopted in many sectors as a way of mitigating risk (e.g. car safety, drinking

water). Communication around risk is an important component of transparency policies, and has received increasing attention from governments in recent years. Transparency on risks is also critical in order to enable informed discussions within societies, including about acceptable tolerance levels and how risk should be shared among different actors. There can be tensions between transparency and risk management. For instance, it has long been noted that the management of national security risks often requires some level of secrecy.<sup>80</sup> Focusing on health, information of a confidential level may make risk management easier, but may conflict with privacy issues.<sup>81</sup>

Regarding access to information specifically, it is relevant in relation to some types of risks (e.g. hazardous pollutants) that affect citizens directly. More broadly, through the use of right to information legislation, the public can be informed of unpublicized risks inherent to a government's actions. In a layman's sense, information and data are critical to risk detection, assessment, and management. Connections exist between data protection, access to information and risk management laws and policies. Also, privacy issues are connected with reputational and other types of risk.

Figure 4.2.

### Examples of linkages between risk management in public administration and institutional principles of SDG 16



Source: Authors' elaboration.

Accountability around risk at all stages of the risk cycle is a cornerstone of effective risk management. Questions in this regard include who is responsible for risk identification and mitigation, how the risk is shared among the stakeholders, as well as how the consequences of risk materialization (including financial crises, natural disasters, or social unrest) are addressed. Partnerships and strategic alliances come together with risk allocation and shared accountability elements. Through its technical focus on standards and compliance and its focus on creating a risk culture, risk management can be a tool for strengthening accountability. Risk management frameworks are often understood as supporting broader accountability and performance frameworks for the public sector.<sup>82</sup> Integrated risk management can be undertaken with the specific purpose of increasing transparency and accountability in public administration and strengthening ethics in the public sector.<sup>83</sup> Lastly, one of the most critical roles of government oversight institutions, which are cornerstones of accountability, is to examine how risk is managed by government agencies. This encompasses, among other types of risks, the effectiveness of government provision of guarantees or insurance products in a various range of activities, including public-private partnerships.

Participation is critical to risk identification, analysis and management in some sectors, for instance for floods and other natural disasters and ecosystem management (e.g. citizen observatories in flood risk management<sup>84</sup>). Depending on the case, participation may be of a general nature (e.g. at the community level), or concern populations at risk for specific risks.

The way risk is managed can have strong impacts on discrimination and inequality outcomes, from the community level to the national level to the global level. Risk management is part of legislation aiming to stamp out exclusion and marginalization. For example, programs of universal access to health care address health-related risk while also addressing discrimination; targeted social protection programs take fragilities of various natures into account. Emergency response

and disaster risk management have a strong “leave no one behind” approach built in them. Frameworks for risk management and resilience building at the community level often pay attention to all vulnerable groups.

Lastly, the notions of risks and vulnerability are also central to effective anti-corruption approaches, as highlighted in chapter 2 of this report. Weaknesses in legal frameworks, accountability frameworks, integrity standards and gaps between policy and practice can all be seen as manifestations of ineffective risk management. At another level, corruption risk is higher in industries where risk management techniques are lax (e.g. extractive industries). Techniques of risk management have been adapted to the analysis of corruption risk and vulnerabilities. For instance, risk heat maps are used to highlight corruption vulnerabilities; the so-called “three lines of defense model” used in risk management is also an anti-corruption tool.<sup>85</sup>

The importance of the institutional principles of SDG 16 varies across sectors and issues. For example, mandated transparency has played a key role in the regulation of risks in the financial sector; in other sectors, it has featured less prominently in risk management approaches and practices. Conversely, public participation may not be critical to managing prudential risk, but is central in other SDG areas.

#### 4.3.6. Challenges to risk management in public administration

Risk management in public administration faces a range of challenges. This section highlights some prominent challenges highlighted by experts consulted for this chapter.

A first class of challenges pointed by experts is linked with top-down, technocratic risk management practices, which tend to put heavy emphasis on technical aspects such as modelling, foresight and innovation, including software development, to the detriment of social or local dimensions. To mitigate this, experts point to the usefulness of bottom-up, rights-based,

#### Box 4.11. Common enablers of effective risk management in public administration

Three success criteria across all stages and common to all risk management processes are:

- (i) high-level ownership of risk management by the senior leadership and governing bodies towards fomenting credibility and legitimacy,
- (ii) horizontal and vertical policy integration across departments and agencies of government at different levels, and engagement with non-state actors through inclusive online and offline platforms; and
- (iii) effective risk communication channels and methods to stave off cognitive biases such as groupthink, priming, confirmation bias, denial and “kicking the can” and allowing open forums to discuss issues freely without fear of retribution.

These cross-cutting criteria can be helpful in aligning incentives with objectives pursued by risk management, while stimulating whole-of-government and whole-of-society risk management.

Source: Authors' elaboration.

community-driven, and vulnerability-focused initiatives with focus on capability and resilience<sup>86</sup>.

Insufficient coordination, collaboration and integration among national and subnational governments, public institutions, the private sector and other stakeholders is another common challenge. Lack of shared methodologies for assessing risks is often an impediment to the comparability of risks and for the design of coherent policy responses.<sup>87</sup> Multi-risk committees and all-hazards approaches to risk management have been attempted in this regard, within the framework of networked governance and joint approaches to SDG implementation,<sup>88</sup> particularly for critical risk areas such as infrastructure, for instance electricity transmission grids.<sup>89</sup> Interoperability and effective sharing of tasks and responsibilities between levels of government are paramount to effective risk management.<sup>90</sup>

Siloed approaches to risk management can treat risk as a mere compliance issue rather than as a cross-cutting policy that needs to be integrated in development policy-making<sup>91</sup>. Trade-offs and synergies of different risk management policies and initiatives (e.g. intersecting and compounding risks, transboundary risks or risks displacing one another) can be overlooked<sup>92</sup>. Duplications and inefficiencies may occur when too many risk management institutions with overlapping mandates exist. Examples of fragmentation include corruption risk assessments and institutional risk assessment being run as separate exercises<sup>93</sup>. Experts underline that integration at the top and ownership by the center of government, including the executive, the legislative and the judiciary, are pivotal to fostering a risk culture.<sup>94</sup> Risk management should be seen in a strategic way, and should extend to strategic and performance risk management.

Another common challenge is linked to the politicisation of certain sectors, especially in contexts where risk prevention and preparedness may not produce immediate and tangible results (for example, climate change) and electoral cycles promote short-termism.<sup>95</sup> Dynamic adaptive policy pathways based on community engagement with focus on long-term resilience rather than short-term risk perspectives, are suggested as possible solutions by experts.<sup>96</sup> In the context of conflict risk, measuring and valuing the benefits of prevention and relating them to the costs of post-conflict recovery and rehabilitation is also needed.<sup>97</sup> At the national level, in late 2016 New Zealand set up a Climate Change Adaptation technical working group. In 2018 the working group recommended a National Risk Assessment and National Adaptation Plan that are both reported upon independently, potentially through the proposed Climate Commission.<sup>98</sup>

Lack of funding, financing opportunities, investment and resource mobilisation means and capacities are common challenges. In some cases, the involvement of the private sector and the use of public-private initiatives may help in transferring and managing risks. In India, regional governments have public-

private cells within them to advise about mutual accountability sharing arrangements for joint ventures.<sup>99</sup>

At the level of individual organizations in public administration, insufficient awareness, weak technical skills and knowledge gaps over coping methods and other risk management techniques are another challenge. Experts point to the need for awareness-raising, education and continuous training on risk, risk management and the SDGs not only for practitioners, but also for educators and people.<sup>100</sup>

Project-level deficiencies in implementation of risk management frameworks include opaque organisational goals; confusion between unwanted outcomes and risks; lack of clear indicators for goals or risks; inadequate methods for monitoring and assessing risks; unclear risk thresholds and action triggers; weak uptake of risk management by senior management and operational personnel; and ineffective risk communication strategies. This is in spite of the existence of a wide variety of national, regional and international standards, guidelines, recommendations and directives on risk management (see Box 4.3 above).

Lack of adequate data is a ubiquitous challenge in risk management. Several issues are involved. First, it is difficult to find granular data disaggregated enough to measure and protect against different types of risks. Germany, for instance, has taken steps to gather geocoded data at the municipal level. Second, even when present, data may not be adequately analyzed due to lack of adequate technology, which is often expensive. Inadequate data analysis skills in public administration are often a compounding challenge, even as data analytics is emerging as a significant component of risk management.<sup>101</sup> In addition, data, even when existing and adequate for risk management purposes, may not be interoperable due to institutional silos, even though interagency and intersectoral communication and exchange of information are critical to integrated risk management.

## 4.4. Conclusion

Risk and related concepts permeate the 2030 Agenda and the Sustainable Development Goals. This reflects a changing paradigm in development circles, and the recognition of the critical importance of incorporating risk considerations into sustainable development strategies, plans and policies, as well as into the culture of public institutions that support their implementation. Public administration has a critical role to play in managing risk across the whole Agenda, as risk manager or regulator, or in other roles. Its performance in this regard critically depends on the engagement of and support from political leadership. Because of their risk-oriented formulation, the SDGs provide a conducive framework for advancing risk management at both political and administrative levels.

This chapter provides an initial exploration of the issue of risk management in public administration in the context of the SDGs. As risk management becomes prominent in development management, public institutions have to not only adopt risk management approaches and tools, but also adapt their cultures and ways of operating in order to embed risks considerations in their daily business. Public institutions and public administration processes to manage risk have evolved over time, driven both by overarching paradigm changes in government and by the development of knowledge and practice of risk management in different fields.

Developments in risk-related practices in different sectors have occurred largely independently from one sector to another. For example, rules and practices relating to the management of systemic risk in finance has had very little to do with developments in natural disaster management. The rise in prominence of risk considerations in public administration has also proceeded at a different pace in different sectors. In some sectors, risks management has been integrated in core functions and practices of public administration for decades (for instance, in the way Central Banks manage systemic risk in the financial sector). In other sectors such as natural disasters and climate change, risk considerations have become central tenets of the mainstream paradigms over the past two or three decades. Relatively new risks such as cybersecurity have gained in importance in recent years and have elicited increasingly sophisticated responses in public administration. In yet other sectors and SDG areas, risk management may not be firmly embedded in the ways public administration thinks of its missions and in the way it delivers its functions on a daily basis.

Therefore, as a whole, risk management at the national level is still primarily done on a sectoral basis, with the high-level government agencies in charge of given areas assuming a lead role for risk management in those. The analysis shows the influence of international and regional institutions in promoting and influencing the adoption of national risk management frameworks in specific sectors.

Yet, risks across SDG areas can also intersect, and they frequently impact one another. For this reason, going beyond managing risks in a siloed fashion is emerging as a trend. In particular, several emerging economies and developing countries have adopted innovative approaches to integrated risk management. They coordinate and integrate their risk management strategies and decision-making processes horizontally across various ministries, departments and agencies, with some of them establishing cross-cutting commissions. An increasing number of countries also integrate their risk management activities vertically by engaging subnational governments. Some countries also involve non-state actors, including civil society, experts and the private sector, in all or parts of their national risk assessment and management exercises.

Assessments of multiple risks has become common, with a growing number of countries having instituted national risks assessment processes. These processes vary significantly across countries in scope, in how forward-looking they are, and in how they connect to other institutional processes of risk management. The coordination of risk management in public administration across a wide range of sectors is still relatively new. Few countries have created a position of Chief Risk Officer, or equivalent, with a role of coordination of government response across a broad range of risks. These trends seem to point to a recognition of the importance of, and potential for, addressing risk in more holistic ways. Because of their breadth of scope, the Sustainable Development Goals can provide a convenient framework for integrated approaches to risk management in public administration.

The chapter shows the high relevance of the institutional principles of SDG 16 to risk management in public administration. The connections are multiple, and apply at different stages of the risk cycle. The importance of specific principles varies across sectors and risks. Transparency is a critical enabler of efficient risk management in many sectors, with the financial sector being perhaps the most prominent example. Communication around risk is an important component of transparency policies, and has received increasing attention from governments in recent years. Transparency on risks is also critical in order to enable informed discussions within societies, including about acceptable tolerance levels and how risk should be shared among different actors.

Accountability around risk is a cornerstone of effective risk management. Questions in this regard include who is responsible for risk identification and mitigation, as well as how the consequences of risk materialization (including financial crises, natural disasters, or social unrest) are addressed. Participation is also critical to risk identification, analysis and management, for instance for floods and other natural disasters. The way risk is managed can also have strong impacts on discrimination and inequality outcomes, from the community level to the global level. Lastly, the notions of risks and vulnerability are also central to effective anti-corruption approaches, as highlighted in chapter 2 of this report.

Further exploration of the topic of risk management in public administration in future editions of the report could focus on risk management practices inside public institutions in different SDG areas. Relevant issues in this regard include the management of change in the culture and norms of public institutions; needs in terms of training and capacity building; and communication around risk.

## Endnotes

- 1 In those disciplines, there is a basic distinction between uncertainty and risk. Risk is a form of uncertainty that is amenable to quantification. A risk is characterized by a probabilistic distribution of possible states of the world, as well as by the distributions of impacts (e.g. losses) under each state.
- 2 Domokos, L. Risk analysis and risk management in the public sector and in public auditing, *Public Finance Quarterly*, 2015, 60: 1, 7-28.
- 3 Berg, H-P, 2010, Risk Management: Procedures, Methods, and Experiences, *RT&A* 1, 2 (17), June: 79-95.
- 4 Farahmand, F. 2005, A Management perspective on risk of security threats to information systems, *Information Technology and Management*, 6: 2-3, 203-225.
- 5 Barrientos, A., 2010, The labour market and economic risk: 'friend' or 'foe?', *Applied Economics*, 35:10, 1209-1217.
- 6 Investorab. Financial Risks. 2018. Available at <https://www.investorab.com/investors-media/risks-and-risk-management/financial-risks/>
- 7 Bremmer, I., 2006, Managing risk in an unstable world, *Harvard Business Review*, September. Available at <http://www.navigaterisk.com/risk/articles/ManagingRisk.cfm>
- 8 Rice, C., A.B. Zegart, *Political risk: how businesses and organisations can anticipate global insecurity*. New York: Twelve: 2018.
- 9 ISO 31000: 2018 Risk management guidelines available at <https://www.iso.org/standard/65694.html>
- 10 COSO ERM (Enterprise Risk Management). Integrating with strategy and performance. Available at <https://www.coso.org/Documents/2017-COSO-ERM-Integrating-with-Strategy-and-Performance-Executive-Summary.pdf>.
- 11 Saylor Academy, 2012, *Risk Management for Enterprises and Individuals*. Available online at <https://resources.saylor.org/wwwresources/archived/site/textbooks/Risk%20Management%20for%20Enterprises%20and%20Individuals.pdf>
- 12 Damodaran, A., 2008, Danger and opportunity: dealing with risk. Available at <http://people.stern.nyu.edu/adamodar/pdfiles/country/dangeranalystsPeru.pdf>. Taleb, N., 2012, *Antifragile: Things that gain from disorder*. New York: Random House. Colander, D., R. Kupers, 2016, *Complexity and the art of public policy solving society's problems from the bottom up*, Princeton University Press, Princeton, New Jersey. Kupers, R., 2018, Resilience in complex organisations, in *Global Risks Report*, World Economic Forum, 2018. Available at <http://reports.weforum.org/global-risks-2018/resilience-in-complex-organizations/>
- 13 UNECE (2018), for instance, denotes the risk management stages in public administration as: Definition of objectives, Identification of Risks, Risk Analysis and Evaluation, Selection of Risk Treatment Strategies, Implementation of Risk Treatment Strategies, Crisis Management (including the development of a plan to deal with the risks), and Monitoring, Review and Improvement of the Risk Management Process. In the niche of disaster risk management, the terms used are variants of: Preparation, Mitigation, Response, Recovery, Evaluation. UNECE, 2018, contribution to the World Public Sector Report 2019. For more on disaster risk management, see Nojavan, M. et al., 2018, Conceptual change of disaster management models: A thematic analysis, *Jamba*, 10(1): 451.
- 14 For an overview of methods and tools of risk management, see particularly Berg, H-P, 2010, Risk Management: Procedures, Methods, and Experiences, *RT&A* 1, 2 (17), June, 79-95; Pritchard, C.L., 2014, *Risk Management: Concepts and Guidance*, 5<sup>th</sup> ed, Taylor and Francis, London; and Standard & Poor's, 2006, *Refining the focus of insurer enterprise risk management criteria*, Ratings Direct, New York, June.
- 15 For instance, so-called "heat maps" are used in sectors as diverse as anti-corruption and environmental management.
- 16 Wucker, A., *The Gray Rhino: How to Recognize and Act on the Obvious Dangers We Ignore*, New York: St. Martin's Press, 2016.
- 17 Specialized risk perspectives may yield different SDG target categorizations and counts. For instance, regarding disaster risk management, UNDP (2018) cites the SDG targets 1.5, 11.A, 13.1, 13.3, 15.4 in addition to some that are listed here.
- 18 For example, frameworks to analyze environmental issues such as the Drivers, Pressures, State, Impacts, Response (DPSIR) framework, used in the Global Environment Outlook reports produced by UNEP, show such linkages and enable an integrated approach to risks analysis.
- 19 For instance, the precautionary principle (or approach) that governs government actions in many contexts is not based on economic considerations, and sometimes results into policies that are very different from policies derived from cost minimization. See OECD, 2014, *Boosting resilience through innovative risk governance*, OECD Publishing, Paris.
- 20 OECD, 2014, *Boosting resilience through innovative risk governance*, OECD Publishing, Paris.
- 21 [https://www.cas.go.jp/jp/seisaku/kokudo\\_kyouseijinka/en/fundamental\\_plan.html](https://www.cas.go.jp/jp/seisaku/kokudo_kyouseijinka/en/fundamental_plan.html)
- 22 UNECE, 2018, contribution to the World Public Sector Report 2019.
- 23 Alter, R., 2018, contribution to the World Public Sector Report 2019.
- 24 For example, the notion of specific vulnerability was at the heart of the recognition in Agenda 21 of small island developing States (SIDS) as a special category of countries in terms of challenges to achieving sustainable development. See United Nations, 1992, *Agenda 21: Programme of Action for Sustainable Development*, New York.
- 25 For example, the perception of health threats posed by genetically modified organisms is very different in Europe and in the USA. Fung, A., M. Graham, D. Weil, 2007, *Full disclosure: The perils and promise of transparency*, Cambridge University Press, Cambridge, USA.
- 26 Klijn, F., M. van Buuren, S. van Rooij, 2004, Flood-risk Management Strategies for an Uncertain Future: Living with Rhine River Floods in the Netherlands? *Ambio*, 33, 3, 141-47.
- 27 Lundberg, J. and J. E. J. Bjorn, 2015, Systemic resilience model, *Reliability Engineering System Safety*. March 2015. Available at [https://www.researchgate.net/publication/276907637\\_Systemic\\_resilience\\_model](https://www.researchgate.net/publication/276907637_Systemic_resilience_model)
- 28 UNECE, 2012, *Risk management in regulatory frameworks: Towards a better management of risks*, New York and Geneva.
- 29 Alter, R., 2019, contribution to the World Public Sector Report.
- 30 Fung, A., M. Graham, D. Weil, 2007, *Full disclosure: The perils and promise of transparency*, Cambridge University Press, Cambridge, USA.
- 31 See for example Gamper, C., L. Alton, B. Signer, M. Petrie, 2017, Managing disaster-related contingent liabilities in public finance frameworks, *OECD Working Papers on Public Governance* No. 27, Paris.

- 32 Kaplan, R., A. Mikes, 2012. Managing risks: A new framework, *Harvard Business Review*, June. Available at <https://hbr.org/2012/06/managing-risks-a-new-framework>
- 33 Osborne, D., T. Gaebler, 1992, *Reinventing government: How the entrepreneurial spirit is transforming the public sector*, New York: Ted Gaebler.
- 34 Fisher, E., 2014, Risk and Governance, in *Oxford Handbook of Governance*, Oxford University Press, London.
- 35 N. Komendantova, 2018, contribution to the World Public Sector Report 2019.
- 36 Howes, M. J., P. Tangney, K. Reis, D. Grant-Smith, K. Bosomworth, P. Burton, 2014, Towards Networked Governance: Improving Interagency Communication and Collaboration for Disaster Risk Management and Climate Change Adaptation in Australia, *Journal of Environmental Planning and Management*, 58,5.
- 37 T. Stanton, 2018, contribution to the World Public Sector Report 2019.
- 38 Donahue, J., R. J. Zeckhauser, 2008, Public-private collaboration, in Goodin, R., M. Moran, M. Rein, Eds., *The Oxford Handbook of Public Policy*, Oxford University Press, Oxford, 509-510.
- 39 Joyce, S., J. Courbe, R. Rodriguez, 2017, *Preventing the Next Data Breach*, post on Harvard Law School Forum on Corporate Governance and Financial Regulation, 10 October 2017, <https://corpgov.law.harvard.edu/2017/10/10/preventing-the-next-data-breach/>
- 40 Borras, S., 2012, Three tensions in the governance of science and technology, in *The Oxford Handbook of Governance*, London: Oxford University Press.
- 41 Silveira P. et al., 2009, On the Design of Compliance Governance Dashboards for Effective Compliance and Audit Management, in Dan A., F. Gittler, F. Toumani (eds), *Service-Oriented Computing, ICSOC/ServiceWave 2009 Workshops*. Lecture Notes in Computer Science, vol 6275. Springer, Berlin, Heidelberg.
- 42 Horita, F. et al., 2015, Development of a spatial decision support system for flood risk management in Brazil that combines volunteered geographic information with wireless sensor networks, *Computers & Geosciences*, 80, July, 84-94.
- 43 Miyazaki, H. et al., 2015, Reviews of Geospatial Information Technology and Collaborative Data Delivery for Disaster Risk Management, *ISPRS Int. J. Geo-Inf.*, 4(4), 1936-1964.
- 44 For example, in the area of disaster risk management, the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters, followed by the Sendai Framework for Disaster Risk Reduction 2015-2030.
- 45 <http://apps.unep.org/repositorytmp/coverage/global>
- 46 <https://preview.grid.unep.ch/>
- 47 Colander, D., R. Kupers, 2016, *Complexity and the art of public policy. Solving society's problems from the bottom up*, Princeton University Press, Princeton, NJ.
- 48 [https://www.agacgfm.org/AGA/Resources/Online%20Library/Research%20Reports/AGA\\_ERM\\_Research\\_Series\\_2017.pdf](https://www.agacgfm.org/AGA/Resources/Online%20Library/Research%20Reports/AGA_ERM_Research_Series_2017.pdf)
- 49 GRC is the integrated collection of capabilities that enable an organization to reliably achieve objectives, address uncertainty and act with integrity. See Mitchell, S., 2007, GRC360: A framework to help organisations drive principled performance, *International Journal of Disclosure and Governance*, 4,4, 279-296.
- 50 Integrated risk management is “a set of practices and processes supported by a risk-aware culture and enabling technologies that improve decision making and performance through an integrated view of how well an organization manages its unique sets of risks.” See [https://www.gartner.com/binaries/content/assets/events/keywords/security/sec11a/gartner\\_srm\\_summit\\_research\\_1.pdf](https://www.gartner.com/binaries/content/assets/events/keywords/security/sec11a/gartner_srm_summit_research_1.pdf)
- 51 Bosetti, L., A. Ivanovic, M. Munshey, 2016, *Fragility, Risk, and Resilience: A Review of Existing Frameworks*, United Nations University, *Background Paper*, October.
- 52 For more, see World Economic Forum, 2018, *Global Risk Report 2018*, Davos, Switzerland. <http://www.rolandkupers.com/wp/wp-content/uploads/2018/03/The-Global-Risks-Report-2018-Reports-World-Economic-Forum.pdf>
- 53 Countries were selected in a balanced manner from all regions of the world and various contexts of development and governance.
- 54 Government of Liberia, 2012, *National Disaster Risk Management Policy*, Monrovia.
- 55 The Basel Committee on Banking Supervision is the primary global standard setter for the prudential regulation of banks and provides a forum for regular cooperation on banking supervisory matters. See <https://www.bis.org/bcb/>.
- 56 European Union's decisions require all Member States to develop risk assessments at the national or sub-national level and to make available to the Commission a summary of the relevant elements by December 2015 and every three years thereafter. Compliance makes EU Member States eligible for thematic operational programmes. See OECD, 2018, *National Risk Assessments: A Cross Country Perspective*, OECD Publishing, Paris.
- 57 For more on FATF recommendations, see <http://www.fatf-gafi.org/publications/fatfrecommendations/documents/fatf-recommendations.html>
- 58 For more, see <http://www.foresight-platform.eu/>
- 59 See United Nations, 2016, *Global Sustainable Development Report 2016*, Department of Economic and Social Affairs, New York.
- 60 For more, see <https://www.gouvernement.fr/risques/les-risques-majeurs-dans-votre-departement>
- 61 A recent report of the OECD covers national risk assessments in great depth for 20 countries. See OECD, 2018, *National Risk Assessments: A Cross Country Perspective*, OECD Publishing, Paris.
- 62 OECD, 2018, *National Risk Assessments: A Cross Country Perspective*, OECD Publishing, Paris.
- 63 Ibid.
- 64 Input by the Permanent Mission of Serbia to the authors, 2018.
- 65 OECD, 2018, *National Risk Assessments: A Cross Country Perspective*, OECD Publishing, Paris.
- 66 World Bank, 2014, Risk and Opportunity, *World Development Report 2014*, Washington, D.C., USA.
- 67 World Economic Forum, 2018, *Global Risk Report 2018*, Davos, Switzerland.
- 68 OECD, 2016, *Étude de l'OCDE sur la gestion des risques au Maroc*, OECD Publishing, Paris.

- 69 D. Dante, 2018, contribution to the World Public Sector Report 2019. Evanina, W., *Evanina Pounds Table for Tougher Cyber Risk Stance*, in MeriTalk. 30 October 2018. <https://www.dni.gov/index.php/nsc-newsroom/item/1922-call-for-chief-risk-officers-and-an-enterprise-wide-security-apparatus-approach>
- 70 Lawrence, J., et al., 2018, National guidance for adapting to coastal hazards and sea level rise: Anticipating change, when and how to change pathway, *Environmental Science & Policy*, 82, 100-107.
- 71 [https://tbinternet.ohchr.org/Treaties/CEDAW/Shared%20Documents/1\\_Global/CEDAW\\_C\\_GC\\_37\\_8642\\_E.pdf](https://tbinternet.ohchr.org/Treaties/CEDAW/Shared%20Documents/1_Global/CEDAW_C_GC_37_8642_E.pdf)
- 72 <http://pubdocs.worldbank.org/en/892921532529834051/FCSList-FY19-Final.pdf>
- 73 <https://www.bti-project.org/en/reports/country-reports/detail/ito/LBR/>
- 74 Government of Liberia, 2012, *National Disaster Risk Management Policy*, Monrovia.
- 75 Security magazine, 2018, *DHS Launches National Risk Management Center*, 1 September. Available at <https://www.securitymagazine.com/articles/89374-dhs-launches-national-risk-management-center>
- 76 P. Tangney, 2018, contribution to the World Public Sector Report 2019. J. Lawrence, contribution to the World Public Sector Report 2019.
- 77 Bloemen, P. C. Zevenbergen, J. Rijke, A. Kingsborough, 2018, Lessons learned from applying adaptation pathways in flood risk management and challenges for the further development of this approach, *Mitigation and Adaptation Strategies for Global Change*, 23, 7, 1083-1108.
- 78 Lawrence, J., et al., 2018, National guidance for adapting to coastal hazards and sea level rise: Anticipating change, when and how to change pathway, *Environmental Science & Policy*, 82, 100-107.
- 79 See <http://www.pacific.undp.org/content/pacific/en/home/operations/projects/resilience-sustainable-development/PRRP.html>
- 80 Riposo, J., M. McKernan, J. A. Drezner, G. McGovern, D. Tremblay, J. Kumar, J. M. Sollinger, 2015, *Issues with Access to Acquisition Data and Information in the Department of Defense: Policy and Practice*, RAND Corporation, Santa Monica, CA. Available at [https://www.rand.org/content/dam/rand/pubs/research\\_reports/RR800/RR880/RAND\\_RR880.pdf](https://www.rand.org/content/dam/rand/pubs/research_reports/RR800/RR880/RAND_RR880.pdf)
- 81 See chapter 6 in United Nations, 2018, *Working together: integration, institutions and the Sustainable Development Goals*, World Public Sector report 2018, Department of Economic and Social Affairs, New York.
- 82 For example, the Commonwealth Risk Management Policy of 2014 supports Australia's Public Governance, Performance and Accountability Act of 2013. See <https://www.finance.gov.au/comcover/risk-management/the-commonwealth-risk-management-policy/>
- 83 For instance, the Institute of Risk Management Kenya has presented ethics (defined as "a system of guidelines for appropriate conduct to comply with rules and regulations to achieve particular results") as a risk management strategy. (<https://irmke.org/public-ethics-risk-management-kenyan-experience/>). In Australia, public agencies adopt enterprise risk management frameworks in conjunction with ethical frameworks for decision-making (New South Wales Public Service Commission 2018).
- 84 When, U., M. Rusca, J. Evers, V. Lanfranchi, 2015, Participation in flood risk management and the potential of citizen observatories: A governance analysis, *Environmental Science and Policy*, 48, 225-236.
- 85 European Union, 2017, Public Internal Control Systems in the European Union: The three lines of defense in a Public Sector environment, *Discussion Paper No. 9*, Ref. 2017-2. Available at [http://ec.europa.eu/budget/pic/lib/docs/2017/CD\\_04\\_ThreeLinesOfDefenseInPublicSector.pdf](http://ec.europa.eu/budget/pic/lib/docs/2017/CD_04_ThreeLinesOfDefenseInPublicSector.pdf)
- 86 R. Van Voorst, contribution to the World Public Sector Report 2019.
- 87 R. Alter, contribution to the World Public Sector Report 2019.
- 88 N. Komendantova, contribution to the World Public Sector Report 2019. G. Labaki, contribution to the World Public Sector Report 2019.
- 89 UNECE, contribution to the World Public Sector Report 2019. A. Fekete, contribution to the World Public Sector Report 2019.
- 90 S. Naundorf, contribution to the World Public Sector Report 2019.
- 91 OECD contribution to the World Public Sector Report 2019.
- 92 A. Fekete, contribution to the World Public Sector Report 2019.
- 93 OECD contribution to the World Public Sector Report 2019.
- 94 R. Alter, contribution to the World Public Sector Report 2019.
- 95 P. Tangney, contribution to the World Public Sector Report 2019.
- 96 R. Bell, contribution to the World Public Sector Report 2019. J. Lawrence, contribution to the World Public Sector Report 2019. P. Tangney, contribution to the World Public Sector Report 2019.
- 97 UNDP, contribution to the World Public Sector Report 2019.
- 98 J. Lawrence, contribution to the World Public Sector Report 2019.
- 99 S. Vedachalam, contribution to the World Public Sector Report 2019. Devkar, G., A. Mahalingam, S. N. Kalidindi, 2013, Competencies and urban public private partnership projects in India: A case study analysis, *Policy and Society*, 32, 2013: 125-142.
- 100 G. Labaki, contribution to the World Public Sector Report 2019.
- 101 OECD, 2018, *National Risk Assessments: A Cross Country Perspective*, OECD Publishing, Paris.