

# Chapter 7:

# Risk reduction across the 2030 Agenda

## 7.1

### Sendai Framework targets and monitoring: a snapshot

The Sendai Framework's intended outcome is a "substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries" by 2030. The goal towards this, described in paragraph 17, is:

*Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience.*

The Sendai Framework outlines seven targets and four priority areas for action to strengthen resilience by preventing new and reducing existing disaster risks. The four priority areas are: (1) understanding disaster risk, (2) strengthening disaster risk governance to manage disaster risk, (3) investing in DRR for resilience and (4) enhancing disaster preparedness for effective response and "build back better" in recovery, rehabilitation and reconstruction.<sup>5</sup>

An increasingly diverse spectrum of stakeholders has made significant efforts since 2015 to implement the Sendai Framework, reaching across different geographies, sectors, jurisdictions and scales. These efforts are organized to pursue the realization of one key outcome and goal, and seven global targets (A–G), as set out in Table 7.1.

---

<sup>5</sup> (United Nations 2015b)

**Table 7.1. Seven global targets of the Sendai Framework**

<b>Target A: Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality between 2020–2030 compared to 2005–2015</b>	
<b>A-1</b>	Number of deaths and missing persons attributed to disasters, per 100,000 population (this indicator should be computed based on Indicators A-2, A-3 and population figures)
<b>A-2</b>	Number of deaths attributed to disasters, per 100,000 population
<b>A-3</b>	Number of missing persons attributed to disasters, per 100,000 population
<b>Target B: Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 between 2020–2030 compared to 2005–2015</b>	
<b>B-1</b>	Number of directly affected people attributed to disasters, per 100,000 population (this indicator should be computed based on Indicators B-2 to B-6 and population figures)
<b>B-2</b>	Number of injured or ill people attributed to disasters, per 100,000 population
<b>B-3</b>	Number of people whose damaged dwellings were attributed to disasters
<b>B-4</b>	Number of people whose destroyed dwellings were attributed to disasters
<b>B-5</b>	Number of people whose livelihoods were disrupted or destroyed, attributed to disasters
<b>Target C: Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030</b>	
<b>C-1</b>	Direct economic loss due to hazardous events in relation to global gross domestic product (this indicator should be computed based on Indicators C-2 to C-6 and GDP figures)
<b>C-2</b>	Direct agricultural loss attributed to disasters (agriculture is understood to include the crops, livestock, fisheries, apiculture, aquaculture and forest sectors as well as associated facilities and infrastructure)
<b>C-3</b>	Direct economic loss to all other damaged or destroyed productive assets attributed to disasters
<b>C-4</b>	Direct economic loss in the housing sector attributed to disasters (data would be disaggregated according to damaged and destroyed dwellings)
<b>C-5</b>	Direct economic loss resulting from damaged or destroyed critical infrastructure attributed to disasters
<b>C-6</b>	Direct economic loss to cultural heritage damaged or destroyed attributed to disasters
<b>Target D: Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030</b>	
<b>D-1</b>	Damage to critical infrastructure attributed to disasters
<b>D-2</b>	Number of destroyed or damaged health facilities attributed to disasters
<b>D-3</b>	Number of destroyed or damaged educational facilities attributed to disasters
<b>D-4</b>	Number of other destroyed or damaged critical infrastructure units and facilities attributed to disasters
<b>D-5</b>	Number of disruptions to basic services attributed to disasters (this indicator should be computed based on Indicators D-6 to D-8)
<b>D-6</b>	Number of disruptions to educational services attributed to disasters
<b>D-7</b>	Number of disruptions to health services attributed to disasters

D-8	Number of disruptions to other basic services attributed to disasters
<b>Target E: Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020</b>	
E-1	Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030
E-2	Percentage of local governments that adopt and implement local disaster risk reduction strategies in line with national strategies (information should be provided on the appropriate levels of government below the national level with responsibility for disaster risk reduction)
<b>Target F: Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this framework by 2030</b>	
F-1	Total official international support (official development assistance (ODA) plus other official flows), for national disaster risk reduction actions (Reporting of the provision or receipt of international cooperation for disaster risk reduction shall be done in accordance with the modalities applied in respective countries. Recipient countries are encouraged to provide information on the estimated amount of national disaster risk reduction expenditure.)
F-2	Total official international support (ODA plus other official flows) for national disaster risk reduction actions provided by multilateral agencies
F-3	Total official international support (ODA plus other official flows) for national disaster risk reduction actions provided bilaterally
F-4	Total official international support (ODA plus other official flows) for the transfer and exchange of disaster risk reduction-related technology
F-5	Number of international, regional and bilateral programmes and initiatives for the transfer and exchange of science, technology and innovation in disaster risk reduction for developing countries
F-6	Total official international support (ODA plus other official flows) for disaster risk reduction capacity-building
F-7	Number of international, regional and bilateral programmes and initiatives for disaster risk reduction-related capacity-building in developing countries
F-8	Number of developing countries supported by international, regional and bilateral initiatives to strengthen their disaster risk reduction-related statistical capacity
<b>Target G: Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030</b>	
G-1	Number of countries that have multi-hazard early warning systems
G-2	Number of countries that have multi-hazard monitoring and forecasting systems
G-3	Number of people per 100,000 that are covered by early warning information through local governments or through national dissemination mechanisms
G-4	Percentage of local governments having a plan to act on early warnings
G-5	Number of countries that have accessible, understandable, usable and relevant disaster risk information and assessment available to the people at the national and local levels
G-6	Percentage of population exposed to or at risk from disasters protected through pre-emptive evacuation following early warning (Member States in a position to do so are encouraged to provide information on the number of evacuated people)

Realization of the outcome, goal and targets is made possible thanks to the significant efforts of Member States under the Hyogo Framework for Action (HFA) 2005–2015. While HFA focused on DRR as an evolution from disaster response and management,<sup>6</sup> the Sendai Framework supports a shift in paradigm. It focuses on a much wider hazard and risk scope, to include natural and man-made, environmental, technological, and biological hazards and risks. It emphasizes the reduction of existing risk and underscores that prevention of new risks is essential to sustainable development (without which development gains will be reversed).

During the HFA period, the monitoring system consisted of biennial self-assessment reporting by Member States and regional intergovernmental organizations. This identified trends, areas of progress and challenges, based on 22 core, principally policy, indicators, according to the five priorities for action. Many Member States participated, with approximately 80% providing national reports at least once over four biennial monitoring cycles since 2007. Sixty-one countries developed reports for 2007–2009, 105 for 2009–2011, 101 for 2011–2013 and 95 for 2013–2015.

The HFA core indicators focused on inputs rather than outputs or outcomes. However, the Sendai Framework has seven global targets, four of which are outcome focused. Consistent with the shift to managing risk, the four targets from A to D are objective and measurable, with the reduction of disaster losses to be assessed relative to the size of national population and economy. Targets A and B explicitly allow international benchmarking of progress relative to the quantitative baseline data of 2005–2015.

Although the Sendai Framework was agreed prior to SDGs, negotiations for the post-2015 agreements occurred in parallel and were mutually supportive. Accordingly, the Sendai Framework anticipates the review of the United Nations General Assembly of “global progress in the implementation of the Sendai Framework as part of its integrated and coordinated follow-up processes to United Nations conferences and summits, aligned with the

Economic and Social Council, the High-level Political Forum on Sustainable Development and the quadrennial comprehensive policy review cycles, as appropriate, ...” (para. 49). Similarly, the Sendai Framework recommended that indicators should be developed through an intergovernmental process by establishment of an Open-ended Intergovernmental Expert Working Group (OEIWG) on indicators and terminology relating to DRR. The work of this group took place in conjunction with the work of the Inter-agency and Expert Group on Sustainable Development Goal Indicators (IAEG-SDGs) (para. 50). From the second half of 2015, both intergovernmental groups and respective Secretariats – UNDRR and the United Nations Department of Economic and Social Affairs (UN DESA) – have collaborated closely to develop the global indicators and monitoring frameworks for the Sendai Framework and the 2030 Agenda.

Comprising experts nominated by Member States and relevant stakeholders, OEIWG developed the terminology relating to DRR and a set of 38 indicators of progress for the seven global targets. The recommendations for the indicators and the terminology were captured in the OEIWG report and were subsequently endorsed by the United Nations General Assembly in February 2017.<sup>7</sup>

OEIWG recommended that UNDRR takes forward the following work:

- (a) Develop minimum standards and metadata for disaster-related data, statistics and analysis with the engagement of national government focal points, national disaster risk reduction offices, national statistical offices, the Department of Economic and Social Affairs and other relevant partners;*
- (b) Develop methodologies for the measurement of indicators and the processing of statistical data with relevant technical partners;*

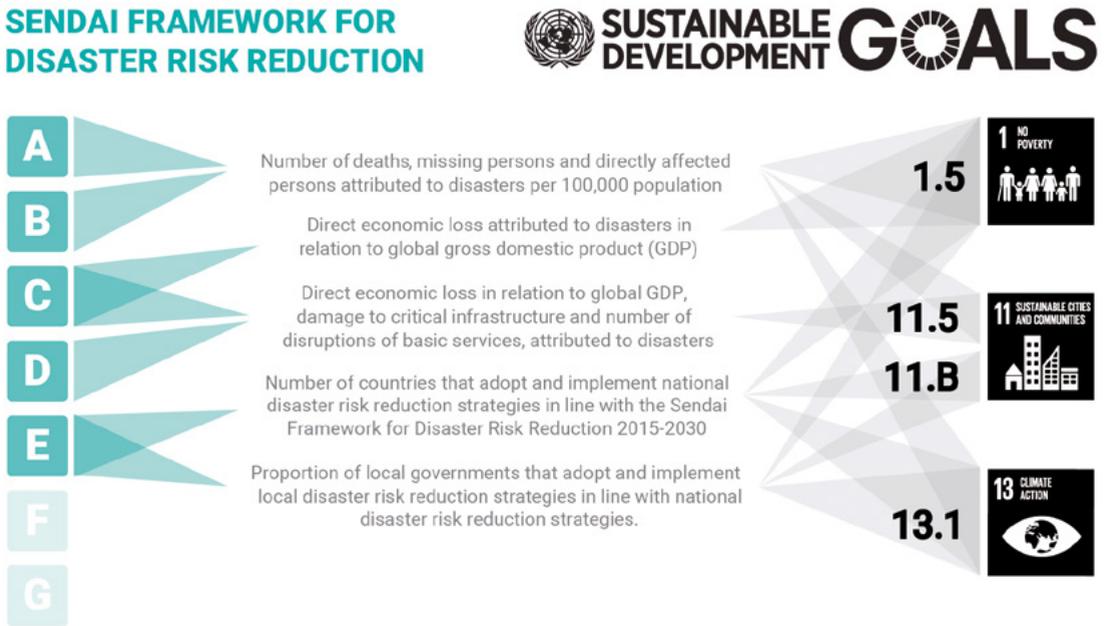
<sup>6</sup> (United Nations 2007)

<sup>7</sup> (United Nations General Assembly 2016b)

In parallel, Member States in IAEG-SDGs identified the explicit relationship between several targets of SDGs and DRR, namely SDGs 1, 11 and 13: eradication of poverty, resilient and sustainable cities, and action to climate change. IAEG-SDGs subsequently recognized the indicators recommended by OEIWG in measuring progress against the targets under these goals. This OEIWG report was endorsed by the United Nations Statistical Commission, at its

forty-eighth session in March 2017. Common indicators, for which UNDRR was nominated as a custodian agency, are now in use for measuring progress in achieving the global Targets A–E of the Sendai Framework as well as the disaster-related targets of SDGs 1, 11 and 13. Monitoring between the two frameworks was therefore made a reality, reducing duplication of data-collection efforts and the reporting burden for countries.

Figure 7.1. Sendai Framework and the 2030 Agenda – multipurpose data, integrated monitoring and reporting



(Source: UNDRR)

To support the monitoring of the Sendai Framework and related elements of the 2030 Agenda, UNDRR was requested to develop an online SFM as the reporting mechanism for all Member States to report on their progress. UNDRR led a comprehensive process that included:<sup>8</sup>

- The Sendai Framework Data Readiness Review, which was conducted by Member States to assess capacity and ability to report against the 38 global indicators of the seven global targets

of the Sendai Framework. This revealed gaps in data requirements of the Sendai Framework and data availability and monitoring capacity; no country reported that data was available or possible for all indicators.

- User-driven development of a prototype of the online SFM based on consultation with Member States and other partners. SFM was developed in partnership with the Enterprise Application Centre and went live on 1 March 2018.

- Development of technical guidance notes on the agreed global indicators covering minimum standards of data and metadata for disaster-related data and statistics, and methodologies for the measurement of indicators.<sup>9</sup> These were made available in January 2018 to assist Member States in the compilation of data for reporting using SFM. Initiated in OEIWG, when developing the technical guidance notes, UNDRR worked closely with NSOs of some Member States, as well as the statistical divisions of UN DESA and the United Nations Regional Economic Commissions (RECs) – in particular the United Nations Economic Commission for Europe (UNECE) and the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) – to support standard setting related to disaster statistics.
- Information reported in the monitor has been included in the 2017 and 2018 SDG reports of the 2018 High-level Political Forum (HLPF) on sustainable development. All indicators common to the targets of the Sendai Framework and SDGs are ranked as Tier I or Tier II in the SDG classification.<sup>10</sup>
- Comprehensive capacity-development exercises with national government institutions, to support Member States in systematic reporting using SFM. Designed to enable participation of a wide spectrum of stakeholders in the monitoring and reporting of progress – as effective risk reduction requires – national governments can select as many reporting institutions across different government and administrative levels as appropriate.
- Development of nationally determined custom targets and indicators – as per the recommendation of OEIWG – to support the monitoring of context-specific national strategies for DRR (Target E due to be achieved in 2020).
- Contributions from regional intergovernmental organizations to monitor and report progress of implementation in their regions using SFM.

The first cycle of reporting using SFM and its disaster loss database subsystem began in March 2018 for Targets A–E and informed the deliberations of the 2018 HLPF on sustainable development.<sup>11</sup> Reporting on the period 2015–2017 for Targets A–G took place in October 2018 and forms the basis of the analysis presented in Chapter 8 of this GAR.

## 7.2

### Data required to monitor the targets

This section describes the types of country data required for monitoring the seven Sendai Framework targets. Such an overview will assist understanding of how the monitoring system gathers and uses data.

The global targets listed in Table 7.1 require measurement of three separate but interconnected types of indicator:

- The first type measures the concrete outcomes at the national level of implementing risk reduction in accordance with the Sendai Framework, in terms of a reduction in losses and disaster impacts. This includes reductions in mortality (Target A), number of people affected (Target B), direct economic loss (Target C) and damage to critical infrastructure and disruption to basic services (Target D). These targets measure some of the main benefits that implementing the Sendai Framework will bring for countries.

<sup>8</sup> (United Nations 2017)

<sup>9</sup> (United Nations 2017a); (UNISDR 2018b)

<sup>10</sup> (United Nations Economic and Social Council 2017)

<sup>11</sup> (United Nations Economic and Social Council 2018)

- The second type relates to Targets E and G and is a qualitative measure of how Member States have established the political and institutional mechanisms to enable them to reduce risk in line with the Sendai Framework, namely the development of DRR strategies and progress in the areas of multi-hazard early warning systems (MHEWSs) and risk information.
- The third type measures enhancements in international cooperation in line with Target F, which is not a measure of a concrete outcome or national implementation, but of the level and type of support for DRR from within the international community.

## 7.2.1

### Targets A to D – disaster losses

Targets A, B, C and D are targets to reduce the losses attributed to disasters relating to mortality (A), number of people affected (B), economic loss relative to GDP (C) and damage to critical infrastructure and disruption of basic services (D). Each of these targets has several indicators of loss and damage. For example, Target A seeks a reduction in mortality caused by disasters and is measured by two indicators: number of deaths and number of missing people.

Each of these indicators may be presented in a more detailed way by disaggregating in relation to specific criteria/variables. For example, both of Target A's loss indicators (dead or missing) can be disaggregated by age, sex, income level, disability, hazard and location. As a consequence, what appears as one number will, in reality, be many numbers that describe the different facets of the main indicator.

The purpose of disaggregated data is to add value and analytical power to the information. Data disaggregated by age or sex, for example, will assist evidence-based understanding of how disasters differently affect children, youth, people with disabilities, older people or women in different stages of

their life cycle. Disaggregation by hazard supports a heightened understanding of the impact of specific hazards and risks on a given community.

Given the complexity of this process, paragraph 24(d) of the Sendai Framework recommends that countries “systematically evaluate, record, share and publicly account for disaster losses and understand the economic, social, health, education, environmental and cultural heritage impacts, as appropriate, in the context of event-specific hazard-exposure and vulnerability information.”

The best way to collect this data is by building, maintaining and systematically improving disaster loss databases. More countries around the world are using DesInventar Sendai, which is a simple and homogeneous methodology to collect, store, analyse and display data on losses caused by disasters. It uses definitions of hazards and impacts that are compliant with the Sendai Framework while employing indicators (including all 38 recommended by OEIWG) with possible disaggregation.<sup>12</sup>

Due to the level of detail at which this kind of data is captured, it is also possible to record losses associated with a range of small- and medium-scale recurring events that cause and accumulate damage, allowing the estimation of what is known as “extensive risk”.<sup>13</sup> These small- and medium-scale disasters are frequently absent from global disaster databases but can have a corrosive effect on lives and livelihoods, especially in poor and vulnerable communities and households.

The data of SFM represents annual aggregates of the impacts of a myriad of small-, medium- and large-scale disasters. Disaster loss databases allow consolidation of the annual data reported via SFM. DesInventar Sendai can generate these figures or provide for the automated electronic transfer of information to the global targets area of SFM.

One of the subsystems of SFM is a multi-country disaster loss database where information from multiple country-based, independent databases is collated, harmonized and integrated. From this system, consolidated loss data is automatically

transferred to the corresponding targets and indicators from the SFM main system.

This large database (approximately 700,000 records at the time of writing) is made public along with GARs and is built using DesInventar Sendai. It is important to note that DesInventar Sendai is not used by all countries, although those Member States that build their own loss databases complying with the specifications in the technical guidance notes may use one of several alternatives for detailed loss data transfer to the Sendai Framework loss database.

Effective monitoring is ultimately in the hands of Member States, necessitating their active and sustained participation. A first review demonstrated the need for more detailed, well-structured disaster loss databases at national level, to enable measurement of outcomes under Targets A–D. This will be an area for focus on capacity-building and institutional coordination at national level in coming years. Such systems are valuable tools and data sets, which will contribute to a better understanding of risks and disaster impacts globally and at national level.

## 7.2.2

### Target E – risk reduction strategies

Targets E and G differ from Targets A–D and F, in that they are qualitative in nature. Consequently, the nature of the data and thus the processes required to collect the data are distinct. Instead of taking numbers from a data source such as loss reports or national budget figures, those who report on Targets E and G must be familiar with the policy framework for DRR in their countries.

Target E, whose deadline for achievement is 2020, has two global indicators: (a) the number of countries that adopt and implement national DRR

strategies in line with the Sendai Framework and (b) the percentage of local governments that adopt and implement local strategies in line with national strategies.

When reporting, Member States need to first identify the existence of national and local strategies, then apply 10 evaluative criteria of alignment of the national disaster strategy with the Sendai Framework. In this way, an indicative total “score” of the strategy’s alignment is possible from a series of qualitative judgments.<sup>14</sup> Evaluators of the criteria will need expertise in DRR as well as familiarity with the strategies and relevant institutional architecture, legislation, availability of information, and programmes and processes associated with DRR in their country. There is a subjective element, as intermediate scores can be assigned optimistically or pessimistically with the corollary impact on the assessment score. But for as long as they are consistent over time and recognized as a qualitative measure of a different type than data such as disaster loss statistics, the criteria provide a useful methodology to assess national risk reduction strategies.

## 7.2.3

### Target F – international cooperation

Target F requires the provision of financial data on international cooperation from recipient countries and provider countries.

**Provide country data:** Data for this target includes that reported on an annual calendar year basis by statistical reporters on international cooperation in national administrations. A statistical reporter, usually located in the national aid agency, Ministry of Foreign Affairs, or Ministry of Finance or Economy, is responsible for the collection of development assistance statistics in each country/

<sup>12</sup> (UNISDR 2019a)

<sup>13</sup> (UNISDR 2013b)

<sup>14</sup> (UNISDR 2018b)

agency.<sup>15</sup> Historically, neither all donors nor recipients have systematically produced data pertaining to DRR; therefore, the requirements of the Sendai Framework reporting are expected to catalyse systematic collection of this data.

The technical guidance notes on Target F recommend statistical reporters apply a new policy marker for DRR, adopted by the OECD Working Party on Statistics,<sup>16</sup> which supports the statistical analysis of financial flows from provider to recipient countries. OECD designed the marker to inform deliberations of the OECD Development Assistance Committee (DAC). The marker is a qualitative statistical tool to identify and record aid activities that target DRR as a policy objective. It offers a methodology for greater specificity for providers and recipients. Data based on the marker provides a measure of the aid that DAC members (or, depending on where the marker and methodology is applied, within the aid budget of a ministry or appropriate agency) allocate in support of DRR, including a snapshot of:

- Individual DRR-focused projects/programmes
- Global estimate of aid committed for DRR
- Proportion of DAC member aid focused on DRR
- Sectors prioritized for DRR-focused aid
- Investments within individual sectors
- Aid prioritized by countries for DRR-focused purposes

In adopting the marker methodology, providers and recipients of aid have further options to generate disaggregated data, such as by sector. This is an approach consistent with that proposed for Targets A–D, wherein disaggregated data can be collected and used at the national level to inform policy and administrative decisions and at the international level to identify global trends, challenges and priorities for investment in risk reduction.

**Recipient country data:** OEIWG also encouraged recipient countries to provide information on the

estimated amount of national DRR expenditure. By calculating national DRR expenditure using data from national accounts, recipient countries can estimate the proportion of total expenditure on national DRR actions that is accounted for by official international support. This responds to the observations of OEIWG members of the importance of demonstrating government policy leadership (of developing countries) in measuring the target.

The Rio Marker methodology, initially developed by OECD to track public investment in CCA, and later modified by UNDRR to be applied to DRR, has been tested in five countries of the South West Indian Ocean region and subsequently in 15 more countries in Asia, Latin America and Africa, where it helped to estimate national expenditure of recipient countries as part of a risk-sensitive budget review (RSBR).<sup>17</sup>

RSBR is a simple, systematic, quantitative analysis of a budget, or series of budgets, that enables countries to estimate and take credit for investment in DRR (the budget review methodology is described in Annex A<sup>18</sup> of each national report), and some countries are beginning to use this method to review public investment planning and financing strategies.<sup>19</sup> <sup>20</sup> If RSBR is conducted by a national government, the findings typically track public investment and can include inward financial flows. An RSBR conducted on a series of annual budgets allows for the identification and tracking of trends over time. An RSBR that also categorizes components of risk management can point to trends in focus such as increasing investment in prevention/risk reduction, as opposed to repeated response to disasters.

RSBR and OECD DRR aid marker methodologies can be combined by countries during budget reviews, depending on their context, to effectively obtain all of the figures required to report in SFM the international aid received, aimed at national DRR actions.

## 7.2.4

### Target G - availability of and access to multi-hazard early warning systems and disaster risk information

Target G entails a series of qualitative measures to assess progress in substantially increasing “the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030.” It has six global indicators, relating to the quality of MHEWSs, as well as that of disaster risk information and assessments. One of the indicators (G-6) is a unique output indicator that quantifies the impact and effectiveness of early warning information in terms of evacuated people.

Reporting for Target G requires a complex set of qualitative data around effective national systems for MHEWSs, for which guidance is provided in the UNDRR technical guidance manual.<sup>21</sup> The guidance is based on the deliberations of OEIWG that have also been informed by experts, through open consultations. The guidance also draws on the MHEWS checklist.<sup>22</sup>

## 7.3

### Conclusions

The centrality of risk reduction to sustainable urbanization and development and CCA is unquestioned and hardwired into the post-2015 global development agendas. Ongoing effort at global, regional and national levels demonstrate a collective intention to foster and implement holistic and risk-based approaches to generating resilient and sustainable economies and societies. While data availability and capacities to realize this ambition are gradually increasing, activities are also scaling up at international, regional, national and subnational levels and define a direction of travel that will be explored in more detail in Part III. However, it is critical to maintain momentum and continue coordinating global and national efforts in terms of strengthening statistical capacity and reporting moving forward. If those who are furthest behind are to be reached first, a sense of urgency is needed. This should be translated into political leadership, sustained funding and commitment for risk-informed policies supported by accurate, timely, relevant, interoperable and accessible data.

---

15 (OECD 2018b)

16 (OECD 2017c)

17 (UNISDR 2015f)

18 (UNISDR 2015d)

19 (UNISDR 2015b); (UNISDR 2015c); (UNISDR 2015e)

20 (UNISDR 2015b)

21 (UNISDR 2018b)

22 (WMO 2017)