Disaster-related Data for Sustainable Development

Sendai Framework Data Readiness Review 2017

Global Summary Report

United Nations

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Executive summary

In adopting the *Sendai Framework for Disaster Risk Reduction 2015 – 2030,* Member States committed to the systematic and cyclical measurement, monitoring and reporting of progress in achieving the outcome and goal of the framework. At the global level, progress is to be measured against the seven global targets[1] and associated indicators[2]. The indicators were developed by the Members and observers of the Open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction (OIEWG), to be able to capture progress in the prevention of new, and the reduction of existing risk, and the strengthening of resilience of persons, businesses, communities and countries. Furthermore, in endorsing the proposal for a global indicator framework for the 2030 Agenda for Sustainable Development, in which were included key global indicators of the Sendai Framework, Member States placed the reduction of disaster risk at the heart of sustainable development.

Effective monitoring of progress in achieving the global targets of the Sendai Framework and disaster-related SDGs, is predicated on the availability, accessibility, quality and applicability of multiple datasets. These data are collected from multiple sources via numerous mechanisms, including but not restricted to national disaster loss accounting systems, national statistical systems, household surveys and routine administrative data. Qualitative and quantitative data will be required, and could be supplemented by Earth observations (EO) and geospatial information (GI) for example.

The first cycle of monitoring progress in implementing the Sendai Framework (which will exceptionally cover the two biennia 2015-2016 and 2017-2018) will be launched in early 2018, ending in March 2019. Feasibility and quality will be dependent upon the availability and accessibility of the required data; data that will need to be sufficiently consistent and comparable to allow meaningful measurement of progress and impact. To assess the current state of play, the OIEWG recommended to conduct a review of the readiness of countries to report against the global targets. In contributing to the *Review*, 87 Member States across all regions assessed their state of readiness to monitor and report, and specifically, the availability of national disaster-related data, disaster-related data gaps and the type of resources required to fill data gaps identified. It also assessed countries' current ability to set up baselines for measuring the global targets of the Sendai Framework.

This Summary Report addresses the key findings of the *Sendai Framework Data Readiness Review* (henceforth referred to as the *Review*), and presents them in four chapters that reflect some of the key characteristics of data.

Chapter 1 is the main body of the report and presents the findings of Member States in terms of **data availability** to report on each of the indicators of the global targets of the Sendai Framework. The findings showed that while data was available for most countries for Targets A and B (respectively 83% and 66% of reporting countries) with between 50% and 60% being able to establish baselines, data are more limited for Targets C and D. Only 37%-55% of countries report having data on economic losses to productive assets, losses in critical infrastructure and cultural heritage, and disruptions to health, education and other basic services, with between 29% and 33% able to develop baselines.

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[1] http://www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf
[2] http://www.preventionweb.net/files/50683_oiewgreportenglish.pdf

Targets E, F and G exhibit wide variations in data availability. From 57% to 72% for data pertaining to early warning systems, risk information and people evacuated, to 39% to 54% of reporting countries for data on national and local DRR strategies under Target E. The lowest data availability is observed for the indicators for Target F, where between 20% and 25% of reporting countries cite that data is available.

In general, with well established disaster loss accounting protocols in many countries, the loss data environment is reasonably populated, although data are typically more available on physical damage and human impact, and less available on economic losses, losses of specific assets and infrastructure, cultural heritage and disruptions to basic services. However, it should be noted that as approximately a quarter of the 98 national disaster loss databases available in the public domain are not government operated, government ownership may be an issue. Consequently, absolute data availability may be higher.

Data availability gaps should be addressed by March 2019, if countries are to be able to report against the Sendai Framework global Targets as planned. The gaps identified are not restrictd to disaster loss data; statistical datasets are also in short supply, for example to be able to measure certain indicators of Target F. Consequently, countries were also asked to identify the resources that would be required to redress the gaps identified, and qualify their answers using the three recognized categories for international cooperation: financial resources, technology transfer and capacity building. In most cases, finance was the resource most frequently cited followed by capacity building and then technology transfer. There were exceptions however; capacity building was cited as the most needed resource to fill the data gap for measuring the indicators on early warning systems.

More detailed analysis can be found in Chapter 1.

Chapter 2 addresses aspects of **data quality** which is so essential to facilitating effective monitoring, reporting and informed decision-making for implementation of the Sendai Framework and the SDGs, inter alia through the application of commonly agreed methodologies and standards to allow consistent and comparable data.

The integration of disaster-related data within national statistical systems can bring quality dividends through applying the fundamental principles of official statistics, and at the same time, facilitate integrated reporting to the SDGs and the Sendai Framework using multi-purpose data sources; thereby reducing the reporting burden on Member States.

Consistent with the work of the Working Group on Geospatial Information of the Inter-agency and Expert Group on SDGs Indicators (IAEG-SDGs), it is recommended that countries explore the added value of using other data – including EO, GI and 'big data' – to amplify the quality and applicability of disaster loss data and disaster-related statistics. To this end, the OIEWG instructed technical work to be undertaken with relevant technical partners, including the international statistical community, to develop guidance on methodologies and standards that would enhance data quality, comparability ad usability. This work is ongoing.

Chapter 3 examines **data accessibility**, which has been identified by a number of countries as another challenge to be overcome if capabilities are to be enhanced and the efficacy and quality of monitoring and reporting is to be optimised. Data may be available, but access to the data may be impeded, for

instance by being subject to a tariff or payment (for which there are no resources). In other circumstances a lack of access to existing datasets may simply be a function of established (mal)practice or the absence of data-sharing protocols, mechanisms and appropriate data governance arrangements.

Chapter 4 outlines aspects of the application of disaster-related data in policy and investment decision-making. Growing political commitment and leadership by governments to improve evidence-based disaster risk management and disaster-related statistics, and ensure that data are made available to the appropriate institutions / individuals with the level of detail needed for decision-making, will bring dividends not only in increased data accessibility, but also in its application in policy action. Data providers should be sure to invest appropriately in identifying and engaging data users so as to be able to effectively drive action

The potential that effective collaboration between National Disaster Management Agencies (NDMAs) and National Statistical Offices (NSOs) offers, is considerable. However, in many cases this will require challenges in information exchange and coordination to be overcome. Factors that include for example: traditional institutional structures and mandates; common baselines; capacities to mutually support and complement respective data and information sets; or information sharing protocols etc..

In conclusion, any of the data-related challenges outlined in this report are hindering the capacity of countries to meaningfully monitor, measure and manage disaster risk and losses. In different country contexts data capacity needs to be addressed comprehensively, by expanding data availability, in developing new data where it does not exist, by creating common methodologies and standards for enhanced data quality, by creating common data sharing platforms and protocols to enhance data accessibility and applicability, and sometimes by breaking down institutional barriers.

Such action will need to be undertaken in a coordinated manner to allow the development of consistent and comparable data at the national, sub-national, as well as the global levels. The need for collective effort in enhancing aspects of data availability, accessibility and quality, has been recognized by a number of key communities – including the national statistical offices, and national mapping and geo-information agencies.

A **Global Partnership for Disaster-related Data for Sustainable Development** would facilitate a collaborative, multi-stakeholder effort (bringing together governments, international organizations, the private sector, civil society groups, and the statistics and data communities), to optimize and operationalize existing and future disaster-related data in support of national and sub-national disaster risk reduction efforts and the measurement of the global targets of the Sendai Framework for Disaster Risk Reduction and the 2030 Agenda for Sustainable Development.

It is expected that upon drafting the terms of reference for the partnership, collaborating entities will use the information provided by the 87 Member States contributing to the Sendai Framework Data Readiness Review 2017 to formulate the strategy and priority actions to support enhanced monitoring, reporting and risk-informed decision-making.

Introduction
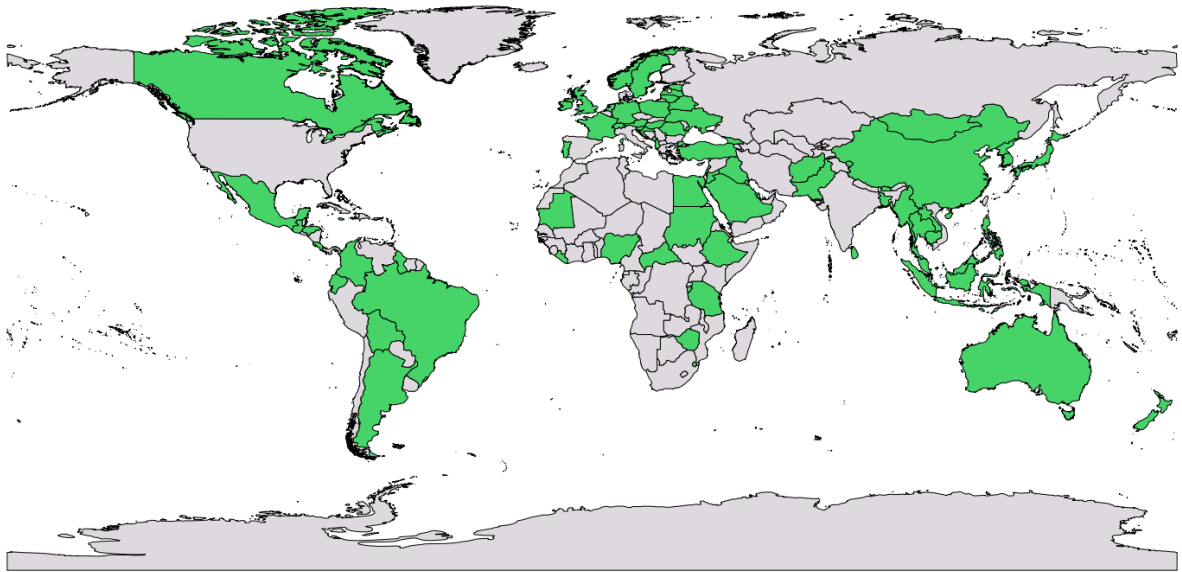
87 countries responded to the 2017 Data Readiness Review

At the request of the Open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction (OIEWG), the UNISDR rolled out the *Sendai Framework Data Readiness Review* (henceforth referred to as the *Review*) in February 2017. As of 20 April 2017, it had received the inputs of 87 countries with the following regional distribution:

- Africa – 10
- Americas – 17
- Arab States – 10

- Asia – 17
- Europe – 26
- Pacific – 7

In contributing to the *Review*, Member States assessed their state of readiness to monitor and report on the indicators measuring the global targets of the Sendai Framework, and specifically, the availability of national disaster-related data, disaster-related data gaps and the type of resources required to fill data gaps identified. It also assessed countries' current ability to set up baselines for measuring the global targets of the Sendai Framework. The results of this assessment are captured in Chapter 1.

In the course of the *Review*, additional information was provided with respect to data quality, data accessibility, and the application of data. These elements are captured in Chapters 2 to 4.

Chapter 1.   Data Availability – findings from the *Sendai Framework Data Readiness Review*

This chapter forms the main body of the report and is divided into two sections:

Section 1: general findings from the *Review* with regard to disaster loss data collection.

Section 2: findings on data availability for specific indicators.

Where data were assumed to be inconsistent or scarce, questions were added so as to allow an assessment of data availability and sources that could serve as a proxy for the indicator. This has become common practice in efforts supporting the development of many of the 98 existing national disaster loss accounting systems[3].

Data availability

The availability of data was requested for two time periods, current availability and the period between 2005 – 2015. The latter represents the implementation period of the Hyogo Framework for Action from which the baseline for the Sendai Framework for Disaster Risk Reduction targets A-D, and potentially some of the indicators of target F, will be constructed. Data availability is being measured in terms of number of countries that have at least 1 data point by region.

87 of the 193 UN Member States responded to the *Review*. The indicators recommended by the OIEWG were endorsed in UN General Assembly Resolution A/RES/71/276 on 2 February 2017, whereupon the *Review* was launched so as to be able to present the results at the Global Platform for Disaster Risk Reduction. At 45% of all Member States, this is an excellent response given the timeframes required for feedback, and the results provide a useful, representative perspective on the state of readiness of Member States to report against both the Sendai Framework and the SDGs.

Those countries still wishing to conduct the readiness review may do so throughout the second half of 2017, facilitating preparation for monitoring and reporting and in so doing providing a more comprehensive representation of the state of readiness.

Disaggregation

Paragraph 19 (g) of the Sendai Framework calls for specific attention to factors such as income, sex, age and disability in disaster risk reduction. Furthermore, the OIEWG recognized the collection of disaggregated data as instrumental to the effective implementation of the Sendai Framework and relevant disaster risk-related targets of the Sustainable Development Goals. At the same time, recognizing the different capacities of Member States with regard to data collection and reporting, and the need for indicators to be usable by all Member States in order to be considered global, the OIEWG noted that data disaggregation might not be immediately feasible across all Member States.

Although not a requirement, the OIEWG encouraged Member States to commence or, as appropriate, further enhance the collection of data on disaster loss disaggregated by income, sex, age and disability, with the engagement of the national statistical offices and in accordance with the Fundamental Principles of Official Statistics, and to start reporting disaggregated data. It also called for actions under target F of the Sendai Framework to strengthen national capacities to do so.

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[3] including those employing the Desinventar methodology – http://Desinventar.net/index_www.html

1.1. Disaster loss data collection at national level – Findings

1.1.1. Availability of disaster loss data

Disaster loss data will be used by countries to report against all indicators of the global targets A-D of the Sendai Framework, as well as the disaster-related targets of SDGs 1, 11 and 13 (see Chapter 2), and therefore comprise the backbone of monitoring progress in target and goal achievement. The *Review* found that 60% of reporting countries have a national database for collecting disaster losses, and of the 87 respondents, 26 countries reported that they use *Desinventar*[4]. *DesInventar* is a conceptual and methodological tool for the generation of National Disaster Inventories and the construction of databases of damage, losses and the effects of disasters; it is supported by UNISDR, UNDP, the European Commission and other technical partners.
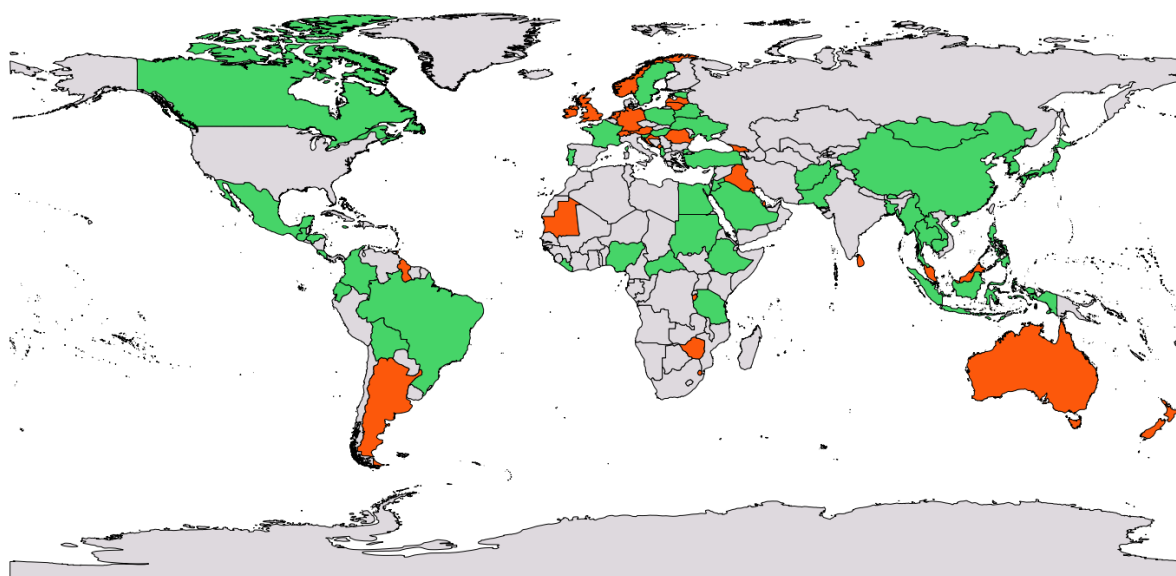
Countries with national disaster loss databases operated by government (in green); countries without (orange); no response (grey)

A common methodology for loss data collection is the precondition for the comparison of monitoring results between countries. It allows for the development of disaster-related statistics, and integrated reporting for both the Sendai Framework and the SDGs.

21 countries reported that they use a methodology other than *DesInventar* to collect loss data; representing 24% of countries participating in the *Review*. The *DesInventar* repository contains data for 98 countries, and a further 11 countries are developing such databases. Therefore, 60% of UN Member States produce loss data using a standardized and comparable methodology that can be used in the reporting of loss indicators. In fact, loss data exists in this repository for 34 of the 87 countries that responded to the *Review*. The discrepancy with the number of countries that reported using *DesInventar* may be attributed to the nature of the sample participating in the *Review*. It may also be indicative of the issue of ownership of national loss data by countries – some of the loss data sets currently stored in *Desinventar* are not being developed and updated by national institutions with

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[4] http://Desinventar.net/index_www.html

responsibilities for disaster risk reduction, but by non-government entities. For example, this is the case in three Caribbean countries where this is being undertaken by the United Nations system; by inter-governmental organizations in six countries in the Pacific; or by research organizations and/or academic institutions, in Mexico, Colombia and Guatemala for example.   In some cases, these institutions are responsible for the monitoring of progress against the Sendai Framework; and in many cases were responsible for HFA monitoring.

The *Review* asked country focal points if they 'collect national disaster loss data', and not if they 'have access to national disaster loss data'. The modest percentage of countries indicating that they 'collect national disaster loss data' could also be indicative of progress that is still required in the institutionalization of disaster loss accounting, and promoting ownership of such data. This has consequences for the accessibility to, and application of, disaster loss data by disaster risk management agencies and other relevant government institutions, that go beyond issues of availability. Such gaps may be addressed by supporting the strengthening of countries' capabilities to collect disaster loss data, and through the institutionalisation of available disaster loss databases.

The majority of countries cited the Ministry of Interior, the civil protection or the disaster management agency as responsible for the collection of disaster loss data at the national level. However, **many other institutions were cited in the production of disaster-related data**, ranging from sectoral line ministries (agriculture, infrastructure, water or transport), or from the emergency services (fire, police etc.) to the national statistical offices (NSO). It is to be noted that research, academic institutions and think tanks, which lead loss data collection in a number of countries using *Desinventar*, find no mention.

A comparative review of 57 disaster loss databases conducted by the UNDP Bureau for Crisis Prevention and Recovery in 2013 found that 80% were using *DesInventar*, of which 77% were hosted by governments, and the remaining 23% were hosted by NGO's, research centres, universities and other consortia. The study also found that when comparing government and non-government hosting arrangements for loss databases, in general the non-governmental hosting arrangements led to higher accessibility, continuity and use of the databases[‡]. The report found that the application of loss data for policy development and analysis was higher in the case of government hosted databases, while application for research is higher in the case of non-government hosted databases – findings that appear to be reflected in the results of the *Review*.

[‡] A Comparative Review of Country-Level and Regional Disaster Loss and Damage Databases. UNDP. Bureau for Crisis Prevention and Recovery. 2013

1.1.2. Disaggregation of disaster loss data

Disaggregated loss data is of particular importance, not least in pursuing Priority 1 of the Sendai Framework "understanding disaster risk" which recognises that it is important "to enhance the development and dissemination of science-based methodologies and tools to record and share disaster losses and relevant disaggregated data and statistics[…]".

By collecting data associated with specific hazards with specific geographical footprints, countries can better understand their impact, which in turn can steer the development and implementation of efficient risk management and risk mitigation measures.

Almost 98% of the countries reporting that they are collecting disaster loss data, do so by geographic location and event; 94% disaggregate disaster loss data by hazard type.   Of those countries that reported to the *Review,* the percentages that disaggregate disaster loss data are as follows.

Deaths, missing, injured or ill attributed to disasters:

- 90% of countries disaggregate by *hazard type, location and event* (consistent with the *Desinventar* approach to disaster loss accounting)
- Between 57% and 66% of countries disaggregate by *age and sex*, which although not required for the Sendai Framework, is a requirement for reporting on the SDGs
- 28% to 31% disaggregate by *disability* (also a requirement for reporting on the SDGs)
- 12% to 15% of countries disaggregate by *income groups*

Number of people whose dwellings were damaged; number of dwellings destroyed; livelihoods disrupted or destroyed; economic loss to housing sector; damaged or destroyed critical infrastructure; number of health and educational facilities damaged and destroyed; number of disruptions to educational services:

- 87% to 98 % of countries disaggregate by *event, location and hazard type*
- Between 42% and 60% disaggregate by *age and sex* (a requirement for reporting on the SDGs)
- 28% to 34% (56% for livelihoods) disaggregate by *disability* (also a requirement for reporting on the SDGs)
- 12% to 17% (23% for livelihoods) disaggregate by *income groups*

Damaged and destroyed heritage; disruptions to other basic services:

- 84% of countries disaggregate disaster loss data by *hazard type, location and event*

By which hazard type do you disaggregate?

Answered: 46   Skipped: 41
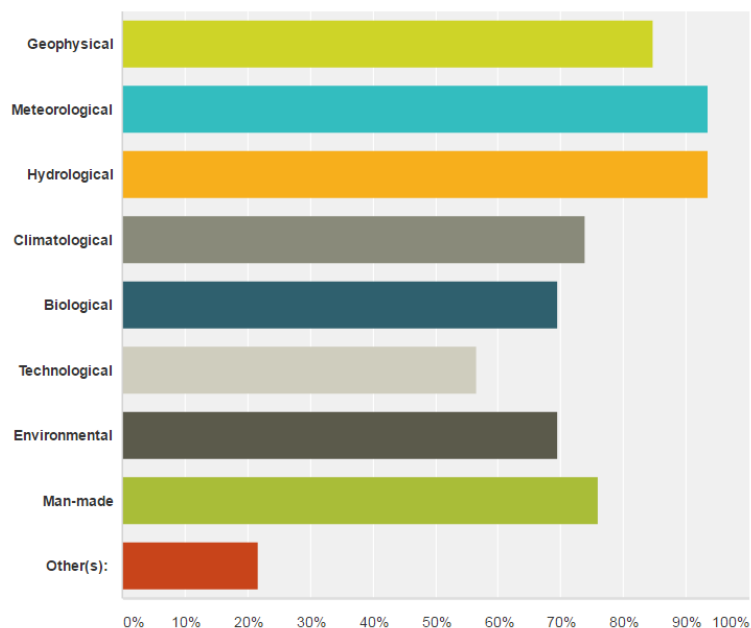
Over 90% of countries currently collect data disaggregated by hydrological and meteorological hazard types, and over 80% of countries collect data on geophysical hazards; these are the three most commonly available categories. Between 68% and 76 % of countries also disaggregate by man-made, climatological, environmental and technological hazards. Approximately 20% of countries disaggregate by other hazard types.

38% of reporting countries indicated that their loss data is currently publically available, while 17% of countries reported that their loss data is not publically available. 45% of countries did not respond.

Disaster loss data is collected for events of all scales, including small-scale disasters, by 45% of countries participating in the *Review;* 10% of reporting countries do not, and 45% did not respond. Although the Sendai Framework stresses the importance of considering all scales of disasters, this implies that for many of the reporting countries, the "extensive risk layer" remains largely invisible.

As revealed in the Global Assessment Report on Disaster Risk Reduction (GAR)✧, the majority of damage and losses incurred since 1990 have been associated with disasters related to extensive risk. In going unrecorded, direct economic losses attributed to disasters have been grossly underestimated. GAR15 highlights that a more accurate estimation should value direct economic losses at around 60% higher than those reported internationally.

✧ http://www.preventionweb.net/english/hyogo/gar/

1.1.3. Capacity needs to develop disaster loss data

What resources do you need to collect data on disasters?

Answered: 35   Skipped: 52
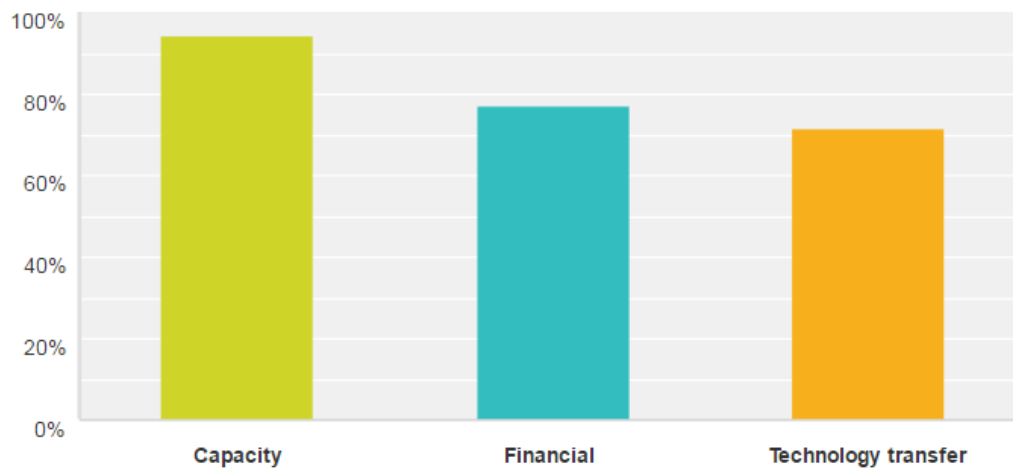
94% of those countries which are not currently collecting disaster loss data, indicated that they require the capacities to do so. 77% and 72% of countries indicate respectively the need for financial resources, and technology transfer.

All countries reporting that they do not currently collect disaster loss data declared their intention to start data collection between now and 2018.

52 countries did not report on the resources required to be able to collect disaster loss data; this equates to the number of countries participating in the *Review* that reported having disaster loss databases.

1.1.4. Development of loss data-related baselines for the Sendai Framework

The baseline for the Sendai Framework for DRR global targets A – D is the average of disaster loss data records between 2005 and 2015 – the implementation period of the HFA. Currently 41% of the countries participating in the *Review* reported having loss data records covering the entire period 2005-2015. 14% of reporting countries reported that they did not have that data required to establish a baseline, and 45% did not respond.
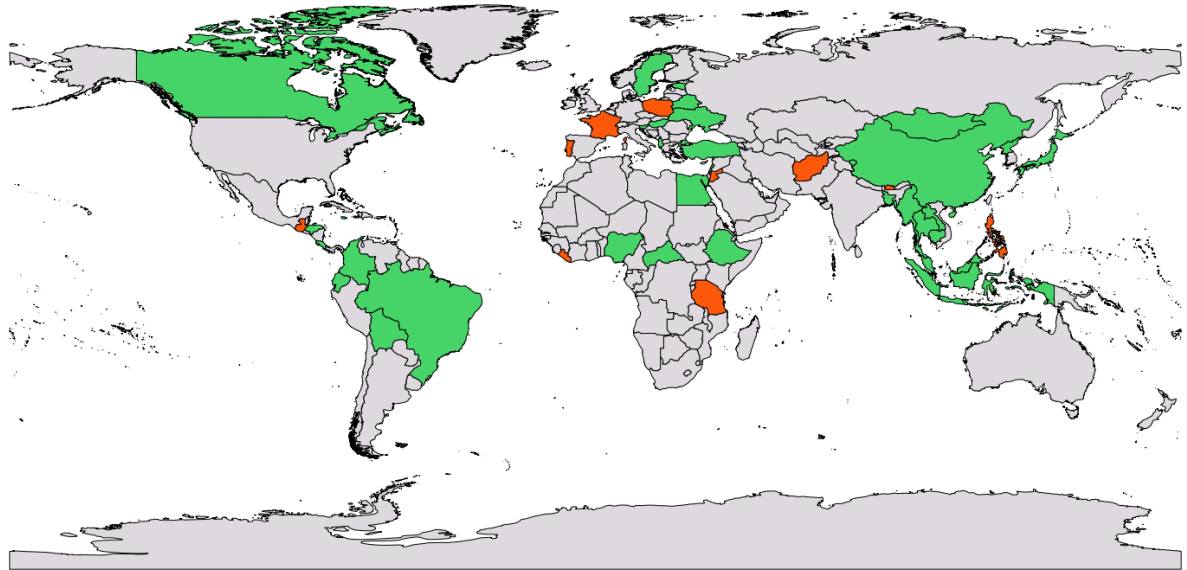

Countries with national disaster loss databases covering the period 2005-2015, operated by government (in green); countries without (orange); no response (grey)

1.2. Data Availability for the Indicators of the Global Targets of the Sendai Framework for Disaster Risk Reduction

Global target A: Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality between 2020-2030 compared with 2005-2015.

Indicator A2: Number of deaths attributed to disasters, per 100,000 population

Data availability Indicator A-2 (Mortality)

● Yes
● No
● Not reported [5]
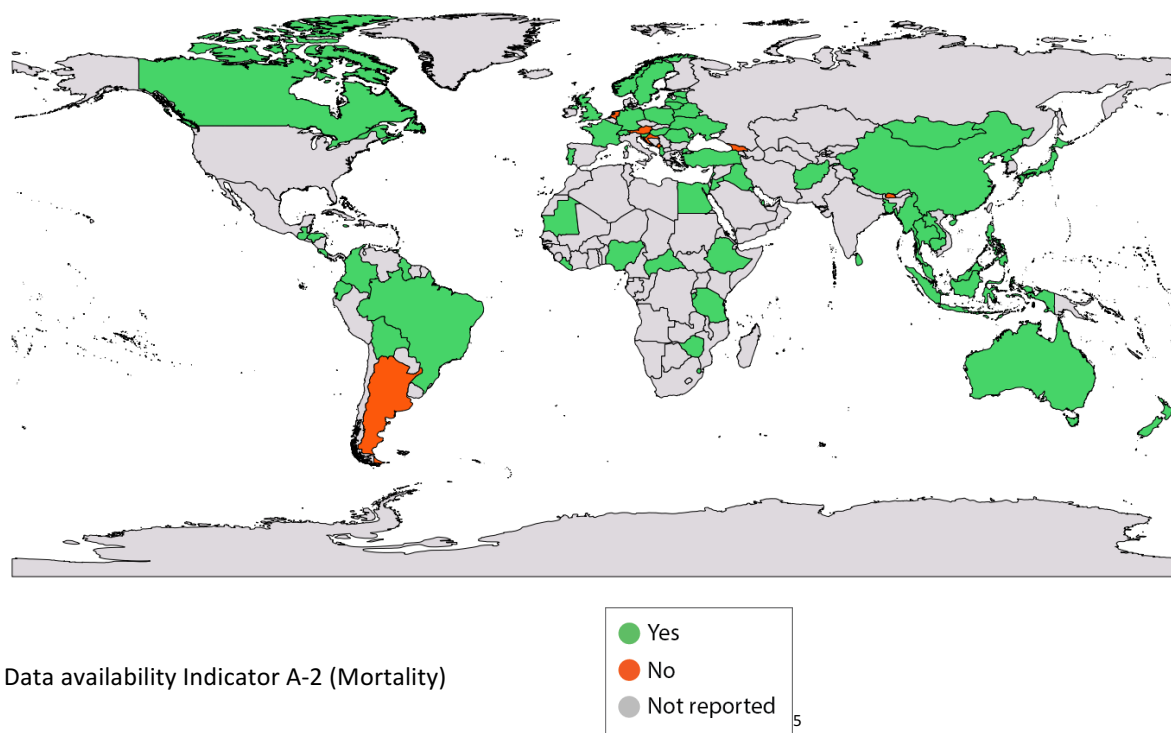
Current data availability: Data for 'number of deaths attributed to disasters, per 100,000 population' are currently available in 72 countries (representing 83% of reporting countries). 10% of reporting countries indicated that they do not collect the number of deaths and 7% did not respond.

Baseline development: 52 countries (representing 60% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 90% of reporting countries; Capacity – 80%; and Technology transfer – 60%. Note that only 11% of reporting countries responded to this question.

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[5] The legend applies to all subsequent illustrations of geographical distribution by indicator

Indicator A3: Number of missing persons attributed to disasters, per 100,000 population

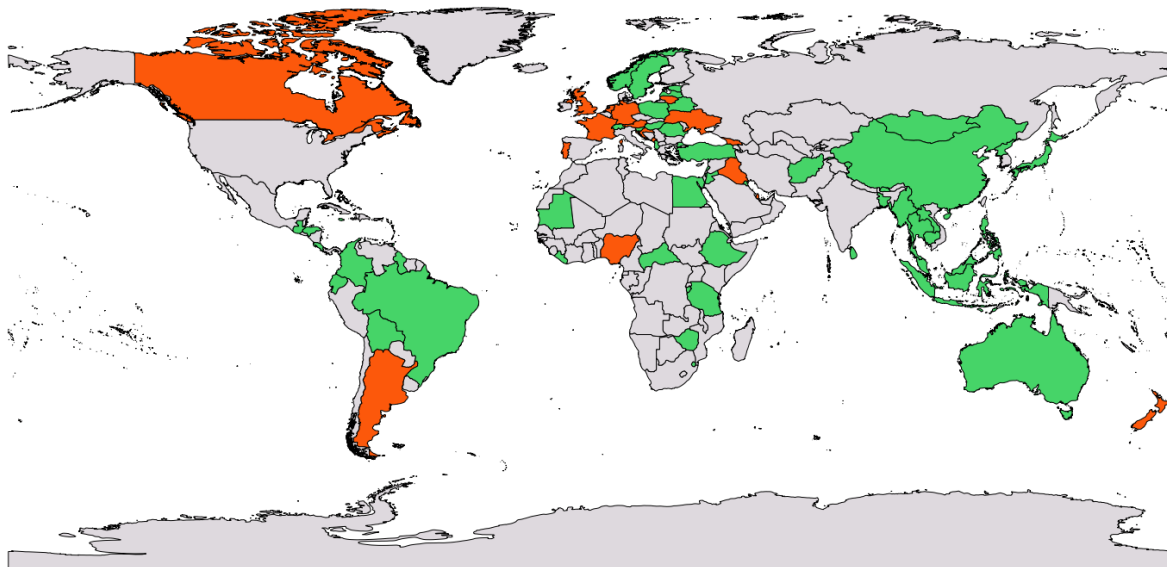Data availability Indicator A-3 (Missing)

Current data availability: Data for 'number of missing persons attributed to disasters, per 100,000 population' are currently available in 61 countries (representing 70% of reporting countries). 21% of reporting countries indicated that they do not collect the number of missing persons and 9% did not respond.

Baseline development: 43 countries (representing 49% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 82% of reporting countries; Capacity – 77%; and Technology transfer – 59%. Note that only 25% of reporting countries responded to this question.

Summary Target A

Of those countries that reported to the *Review,* the percentages that collect data are as follows:

- ▫ 83% on *human deaths attributed to disasters*
- ▫ 70% on *people missing attributed to disasters*.

Relative to the indicators under other targets, Target A exhibits the highest percentage of countries with data currently available. 50-60% of the countries reporting in the *Review* are able to develop a baseline with existing 2005-2015 data.

Global target B: Substantially reduce the number of affected people globally by 2030, aiming to lower average global figure per 100,000 between 2020-2030 compared with 2005-2015.

Indicator B2: Number of injured or ill people attributed to disasters, per 100,000 population
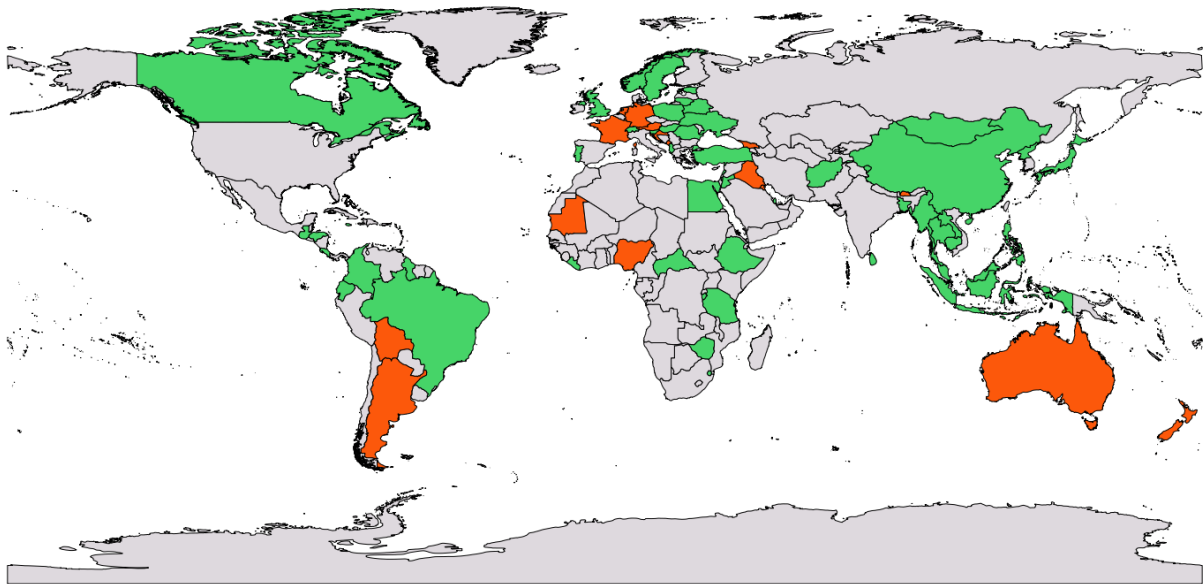
Data availability Indicator B-2 (Injured/Ill)

Current data availability: Data for 'number of injured or ill people attributed to disasters, per 100,000 population' are currently available in 61 countries (representing 70% of reporting countries). 19% of reporting countries indicated that they do not collect the number of injured or ill people and 10% did not respond.

Baseline development: 45 countries (representing 52% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 83% of reporting countries; Capacity – 61%; and Technology transfer – 61%. Note that only 21% of reporting countries responded to this question.

Indicator B3: Number of people whose damaged dwellings were attributed to disasters
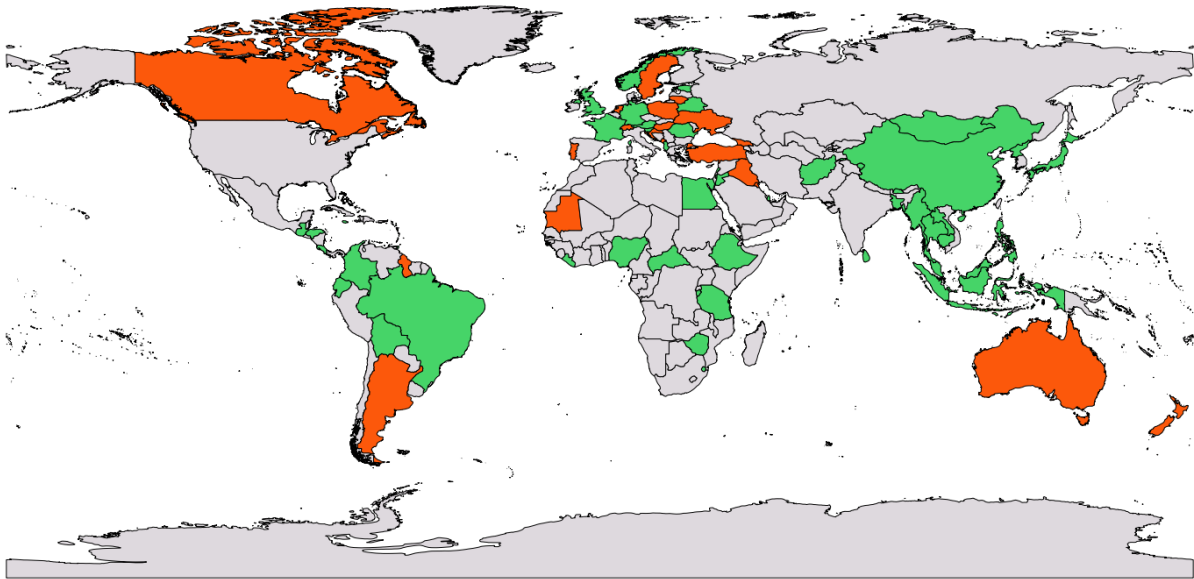
Data availability Indicator B-3 (Dwellings damaged)

Current data availability: Data for 'number of people whose dwellings were damaged attributed to disasters' are currently available in 57 countries (representing 65% of reporting countries). 25% of reporting countries that they do not collect the number of people whose dwellings were damaged and 10% did not respond.

Baseline development: 43 countries (representing 49% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 95% of reporting countries; Capacity – 76%; and Technology transfer – 57%. Note that only 24% of reporting countries responded to this question.

Alternative data for indicator B3.

B3a: Number of dwellings that were damaged attributed to disasters

Current data availability: Data for 'number of dwellings that were damaged attributed to disasters' are currently available in 60 countries (representing 69% of reporting countries). 20% of reporting countries indicated that they do not collect the number of dwellings that were damaged and 11% did not respond.

Baseline development: 46 countries (representing 53% of reporting countries) reported having data to cover the entire period 2005-2015.

Metadata for B3a (and B4a)

B3b: Official statistical data source providing number of people per household

Current data availability: Official statistics providing the 'number of people per household' are currently available in 59 countries (representing 68% of reporting countries). 21% of reporting countries indicated that this is not available from official statistics and 12% did not respond.

Indicator B4: Number of people whose destroyed dwellings were attributed to disasters

Data availability Indicator B-4 (Dwellings destroyed)

Current data availability: Data for 'number of people whose dwellings were destroyed attributed to disasters' are currently available in 50 countries (representing 57% of reporting countries). 31% of reporting countries indicated that they do not collect the number of people whose dwellings were destroyed and 12% did not respond.

Baseline development: 50 countries (representing 57% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 93% of reporting countries; Capacity – 68%; and Technology transfer – 61%. Note that only 32% of reporting countries responded to this question.
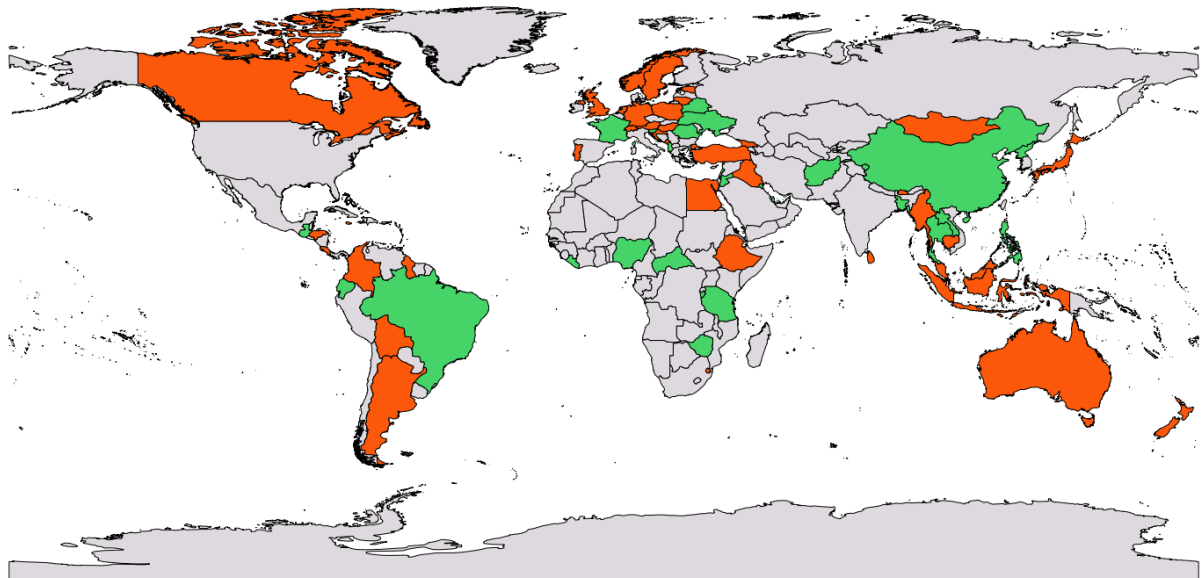
Alternative data for indicator B4:

B4a: Number of dwellings that were destroyed attributed to disasters

Current data availability: Data for 'number of people whose dwellings were destroyed attributed to disasters' are currently available in 60 countries (representing 69% of reporting countries). 20% of reporting countries indicated that they do not collect the number of dwellings destroyed and 11% did not answer.

Baseline development: 45 countries (representing 52% of reporting countries) reported having data to cover the entire period 2005-2015.

Indicator B5: Number of people whose livelihoods were disrupted or destroyed attributed to disasters

Data availability Indicator B-5 (Livelihoods damaged or destroyed)

Current data availability: Data for 'number of people whose livelihoods were disrupted or destroyed attributed to disasters' are currently available in 34 countries (representing 39% of reporting countries). 49% of reporting countries indicated that they do not collect the number of people whose livelihoods were disrupted or destroyed and 12% did not respond.

Baseline development: 22 countries (representing 25% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 91% of reporting countries; Capacity – 68%; and Technology transfer – 81%. Note that 49% of reporting countries responded to this question.

Alternative data for indicator B5:

B5a: Physical damage to the agricultural sector attributed to disasters

Current data availability: Data for 'physical damage to the agricultural sector attributed to disasters' are currently available in 59 countries (representing 68% of reporting countries). 21% of reporting countries indicated that they do not collect the physical damage to the agricultural sector and 11% did not respond.

Baseline development: 39 countries (representing 45% of reporting countries) reported having data to cover the entire period 2005-2015.

B5a 1. Number of hectares of crop land damaged by disasters

Current data availability: Data for 'number of hectares on crop land damaged by disasters' are currently available in 55 countries (representing 63% of reporting countries). 5% of reporting countries indicated that they do not collect the number of hectares of crop land damaged and 32% did not respond.

B5a 2. Type of crops damaged by disasters

Current data availability: Data for 'type of crops damaged by disasters' are currently available in 50 countries (representing 57% of reporting countries). 10% of reporting countries indicated that they do not collect the type of crops damaged and 33% did not respond.

B5a 3. Number of hectares of aquacultures damaged by disasters

Current data availability: Data for 'number of hectares of aquacultures damaged by disasters' are currently available in 37 countries (representing 43% of reporting countries). 25% of reporting countries indicated that they do not collect the number of hectares of aquacultures damaged and 32% did not respond.

B5a 4. Number of fishing vessels damaged by disasters (Fisheries)

Current data availability: Data for 'number of fishing vessels damaged by disasters (Fisheries)' are currently available in 32 countries (representing 37% of reporting countries). 31% of reporting countries indicated that they do not collect the number of fishing vessels damaged and 32% did not respond.

B5a 5. Type of fishing vessels damaged by disasters (Fisheries)

Current data availability: Data for 'type of fishing vessels damaged by disasters (Fisheries)' are currently available in 26 countries (representing 30% of reporting countries). 38% of reporting countries indicated that they do not collect the type of fishing vessels damaged and 32% did not respond.

B5a 6. Number of hectares of forests damaged by disasters

Current data availability: Data for 'number of hectares of forests damaged by disasters' are currently available in 43 countries (representing 49% of reporting countries). 19% of reporting countries indicated that they do not collect the number of hectares of forests damaged and 32% did not respond.

B5a 7. Type of forests (incl. Plantations) damaged by disasters

Current data availability: Data for 'type of forests (incl. Plantations) damaged by disasters' are currently available in 39 countries (representing 45% of reporting countries). 23% of reporting countries indicated that they do not collect the type of forests damaged and 32% did not respond.

B5a 8. Number of livestock lost by disasters

Current data availability: Data for 'number of livestock lost by disasters' are currently available in 51 countries (representing 59% of reporting countries). 9% of reporting countries indicated that they do not collect the number of livestock lost and 32% did not respond.

B5a 9. Type of livestock lost by disasters

Current data availability: Data for 'type of livestock lost by disasters' are currently available in 49 countries (representing 56% of reporting countries). 12% of reporting countries indicated that they do not collect the type of forests damaged and 32% did not respond.

Summary Target B

Of those countries that reported to the *Review,* the percentages that collect data are as follows:

- ▫ 70% on *people injured or ill attributed to disasters*
- ▫ 57-65% on *people whose dwellings were damaged or destroyed due to disasters.* However, when taking proxy data on the number of dwellings damaged and destroyed, combined with statistical data on population, 70% of countries are able to measure the respective indicators.

53-57% of countries reporting to the *Review* are able to develop a baseline with existing 2005-2015 data.

- ▫ 39% of countries collect data on the number of *people whose livelihoods that were disrupted or destroyed attributed to disasters*
- ▫ 68% on *physical damage to livelihoods*, which, when combined with population data can be used as a proxy.
- ▫ 56-63% on *losses to livestock and crops*, and 30-49% on *losses to aquacultures, forest and fishing vessels*.

The percentage of countries reporting to the *Review* able to develop a baseline with existing 2005-2015 data is as follows:

- ▫ 45% for *physical damage to livelihood*
- ▫ 25% on *number of people with livelihoods disrupted or destroyed*.

Global target C: Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030.

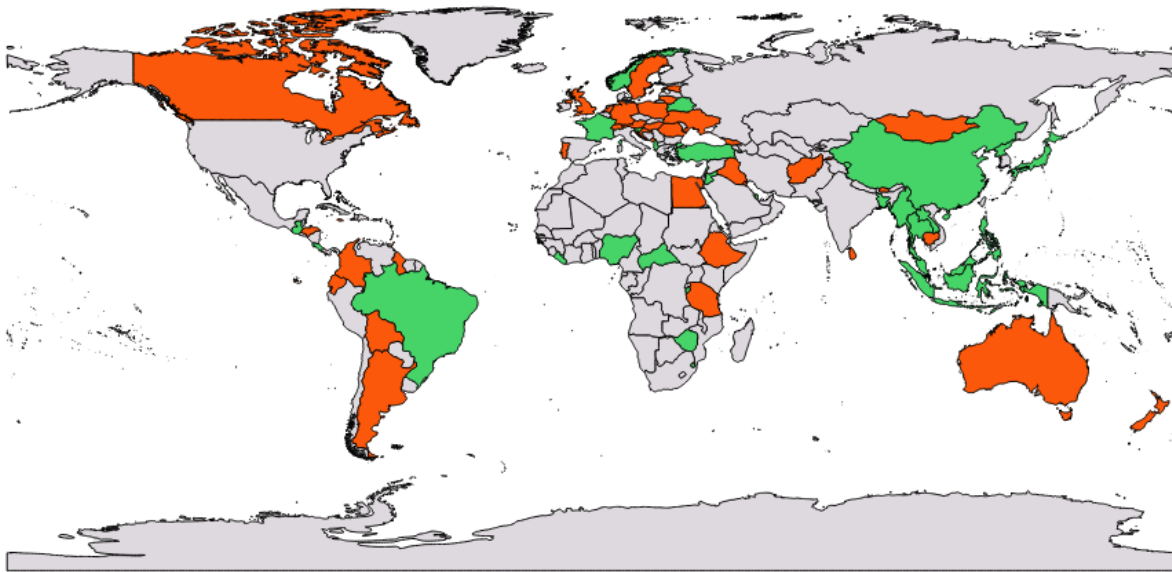### *Indicator C2: Direct agricultural loss attributed to disasters*
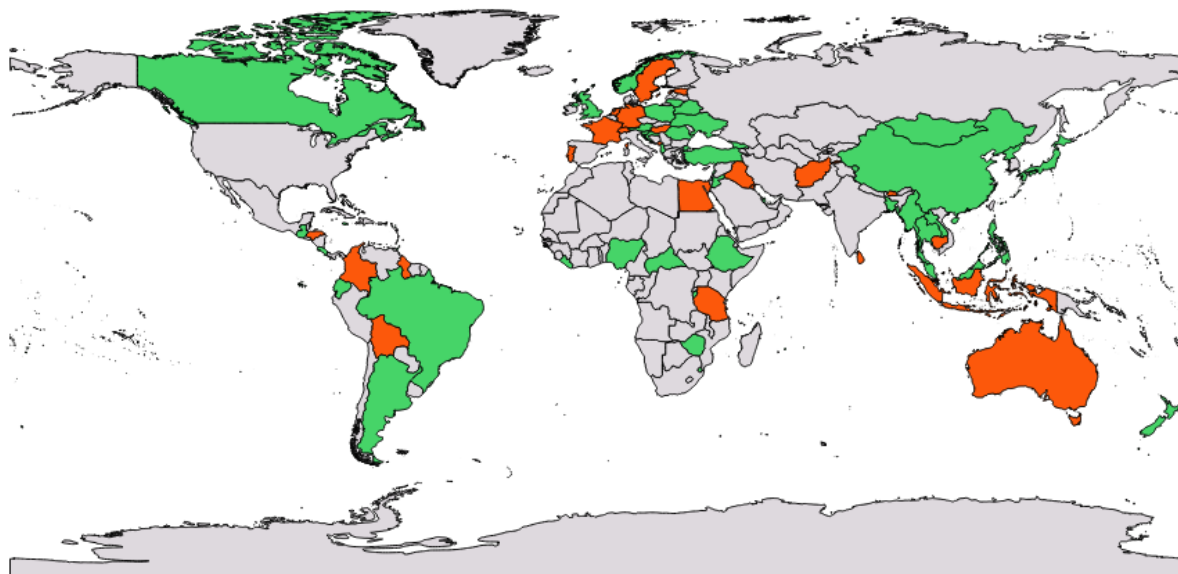
Data availability Indicator C-2 (Direct agricultural loss attributed to disasters)

Current data availability: Data for 'direct agricultural loss attributed to disasters' are currently available in 59 countries (representing 68% of reporting countries). 21% of reporting countries indicated that they do not collect the direct agricultural loss attributed to disasters and 11% did not respond.

Baseline development: 39 countries (representing 45% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 85% of reporting countries; Capacity – 77%; and Technology transfer – 73%. Note that only 30% of reporting countries responded to this question.

Indicator C3: Direct economic loss due to all other damaged or destroyed productive assets attributed to disasters

Data availability Indicator C-3 (Damaged or destroyed productive assets)

Current data availability: Data for 'direct economic loss due to all other damaged or destroyed productive assets attributed to disasters' are currently available in 36 countries (representing 41% of reporting countries). 47% of reporting countries indicated that they do not collect the direct economic loss due to all other damaged or destroyed productive assets and 12% did not respond.

Baseline development: 25 countries (representing 29% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 93% of reporting countries; Capacity – 76%; and Technology transfer – 76%. Note that 47% of reporting countries responded to this question.

Alternative data for indicator C3:

C3a: Physical impact to all other damaged or destroyed productive assets attributed to disasters

Current data availability: Data for 'physical impact to all other damaged or destroyed productive assets attributed to disasters' are currently available in 35 countries (representing 40% of reporting countries). 47% of reporting countries indicated that they do not collect the physical impact to all other damaged or destroyed productive assets and 12% did not respond.

Baseline development: 20 countries (representing 23% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 95% of reporting countries; Capacity – 81%; and Technology transfer – 74%. Note that only 48% of reporting countries responded to this question.

### C3a 1: Number of industrial facilities destroyed or damaged by disasters

Current data availability: Data for 'number of industrial facilities destroyed or damaged by disasters' are currently available in 31 countries (representing 36% of reporting countries). 5% of reporting countries indicated that they do not collect the number of industrial facilities destroyed or damaged and 59% did not respond.

C3a 2: Number of commercial buildings destroyed or damaged by disasters

Current data availability: Data for the 'number of commercial buildings destroyed or damaged by disasters' are currently available in 31 countries (representing 36% of reporting countries). 5% of reporting countries indicated that they do not collect the number of commercial buildings destroyed or damaged and 59% did not respond.

C3a 3: Number of tourism facilities (such as hotel) destroyed or damaged by disasters

Current data availability: Data for 'number of tourism facilities (such as hotel) destroyed or damaged by disasters' are currently available in 29 countries (representing 33% of reporting countries). 7% of reporting countries indicated that they do not collect the number of tourism facilities (such as hotel) destroyed or damaged and 60% did not respond.

Indicator C4: Direct economic loss in the housing sector attributed to disasters
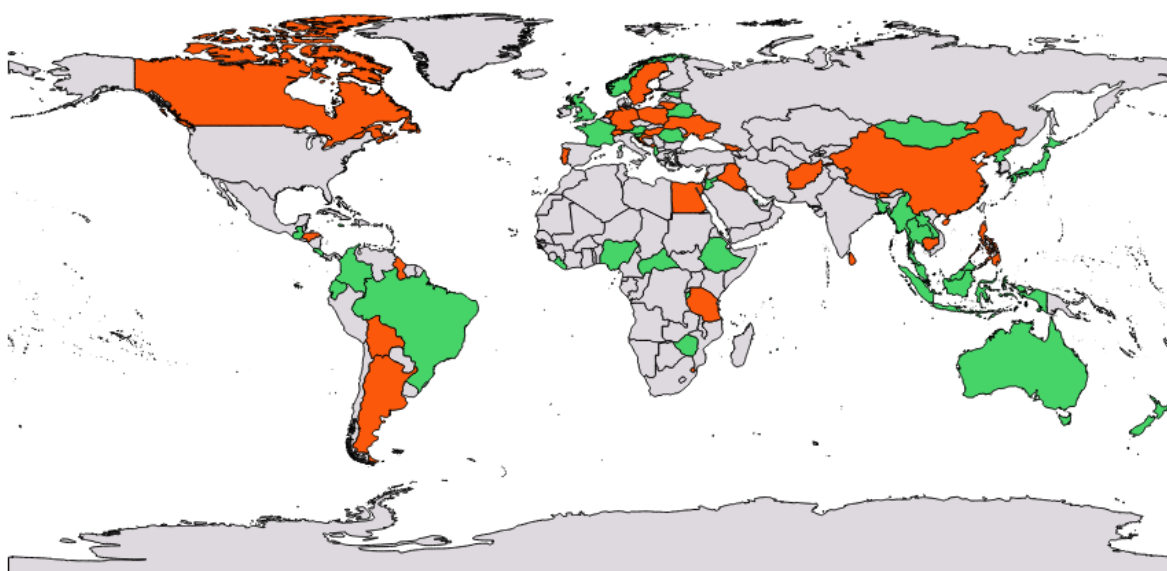
Data availability Indicator C-4 (Direct economic loss in the housing sector attributed to disaster)

Current data availability: Data for 'direct agricultural loss attributed to disasters' are currently available in 44 countries (representing 51% of reporting countries). 37% of reporting countries indicated that they do not collect the direct agricultural loss attributed to disasters and 13% did not respond.

Baseline development: 30 countries (representing 34% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 91% of reporting countries; Capacity – 73%; and Technology transfer – 76%. Note that only 38% of reporting countries responded to this question.

Alternative data for indicator C4:

C4a: Official statistical data source which provides average value per square meter of construction, average size of dwelling, average value of dwelling

Current data availability: Official statistics detailing the 'number of dwellings that were damaged attributed to disasters' are currently available in 38 countries (representing 44% of reporting countries). 44% of reporting countries indicated that they do not collect the number of dwellings that were damaged and 12% did not respond.

Resources needed to collect data: Financial resources – 97% of reporting countries; Capacity – 84%; and Technology transfer – 82%. Note that 44% of reporting countries responded to this question.

C4b: Number of dwellings that were damaged attributed to disasters

Current data availability: Data for 'number of dwellings that were damaged attributed to disasters' are currently available in 60 countries (representing 69% of reporting countries). 20% of reporting countries indicated that they do not collect the number of dwellings that were damaged and 11% did not respond.
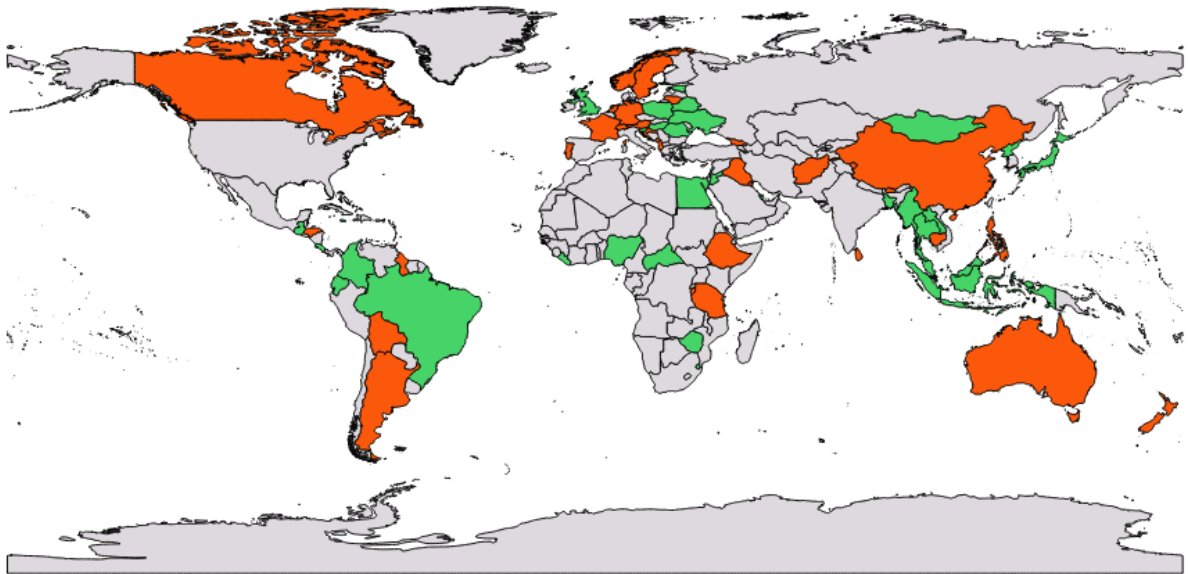
Baseline development: 46 countries (representing 53% of reporting countries) reported having data to cover the entire period 2005-2015.

C4c: Number of dwellings that were destroyed attributed to disasters

Current data availability: Data for 'number of people whose dwellings were destroyed attributed to disasters' are currently globally available in 60 countries (representing 69% of reporting countries). 20% of reporting countries indicated that they do not collect the number of missing persons and 11% did not respond.

Baseline development: Globally 45 countries (representing 52% of reporting countries) reported having data to cover the entire period 2005-2015.

Indicator C5: Direct economic loss resulting from damaged or destroyed critical infrastructure attributed to disasters

Data availability Indicator C-5 (Direct economic loss resulting from damaged or destroyed critical infrastructure)

Current data availability: Data for 'direct economic loss resulting from damaged or destroyed critical infrastructure' are currently available in 41 countries (representing 47% of reporting countries). 40% of reporting countries indicated that they do not collect the direct economic loss resulting from damaged or destroyed critical infrastructure and 13% did not respond.

Baseline development: 27 countries (representing 31% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 94% of reporting countries; Capacity – 63%; and Technology transfer – 69%. Note that only 40% of reporting countries responded to this question.

Alternative data for indicator C5:

C5a: Number of other destroyed or damaged critical infrastructure units and facilities attributed to disasters

Current data availability: Data for 'number destroyed or damaged critical infrastructure units and facilities' are currently available in 48 countries (representing 55% of reporting countries). 30% of reporting countries indicated that they do not collect the number of destroyed or damaged critical infrastructure units and facilities and 15% did not respond.

Baseline development: 27 countries (representing 31% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 94% of reporting countries; Capacity – 79%; and Technology transfer – 76%. Note that only 38% of reporting countries responded to this question.

C5b: Official statistical data source which provides average value per square meter of construction for schools, hospitals, average size of critical infrastructures (square meters) average value per kilometre of road construction

Current data availability: Official statistical data providing the 'average value per square meter of construction for schools, hospitals, average size of critical infrastructures (square meters), average value per kilometre of road construction' are currently globally available in 27 countries (representing 31% of reporting countries). 55% of reporting countries indicated that they do not collect such data and 14% did not respond.

Resources needed to collect data: Financial resources – 94% of reporting countries; Capacity – 77%; and Technology transfer – 77%. Note that 55% of reporting countries responded to this question.

C5c: Number of educational facilities destroyed or damaged by disasters

Current data availability: Data for 'number of educational facilities destroyed or damaged' are currently available in 56 countries (representing 64% of reporting countries). 22% of reporting countries indicated that they do not collect the number of educational facilities destroyed or damaged and 14% did not respond.

C5d: Number of health facilities destroyed or damaged by disasters

Current data availability: Data for 'number of health facilities destroyed or damaged' are currently available in 56 countries (representing 64% of reporting countries). 22% of reporting countries indicated that they do not collect the number of health facilities destroyed or damaged and 14% did not respond.

C5e: Number of kilometres of roads destroyed or damaged by disasters

Current data availability: Data for the 'number of kilometres of roads destroyed or damaged' are currently available in 38 countries (representing 44% of reporting countries). 11% of reporting countries indicated that they do not collect the number of kilometres of roads destroyed or damaged and 45% did not respond.

Indicator C6: Direct economic loss to cultural heritage damaged or destroyed attributed to disasters
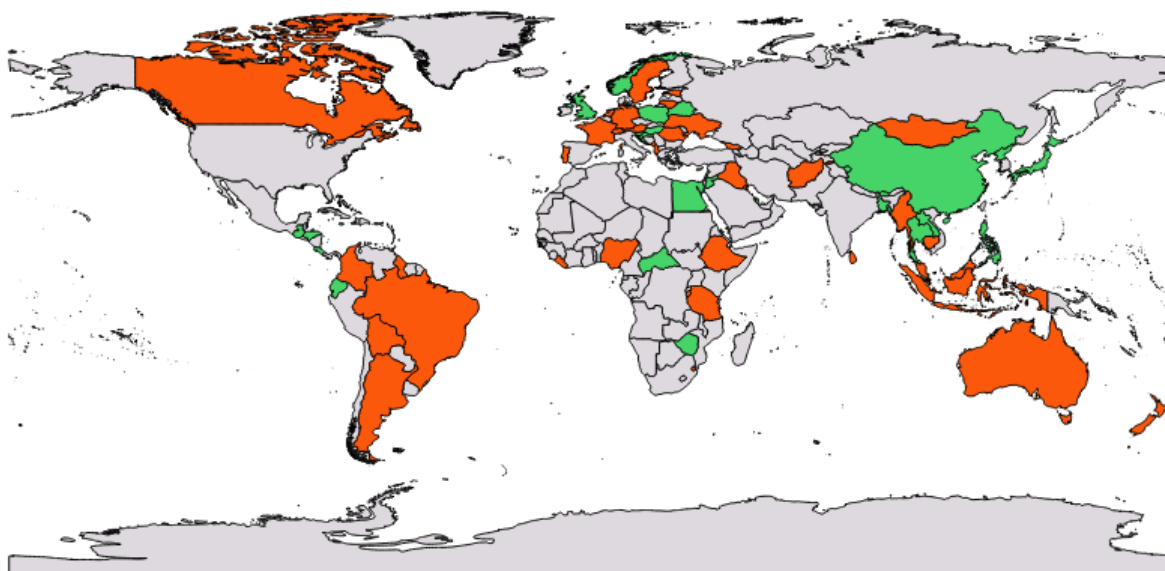
Data availability Indicator C-6 (Damaged or destroyed cultural heritage)

Current data availability: Data for 'direct economic loss to cultural heritage damaged or destroyed attributed to disasters' are currently available in 32 countries (representing 37% of reporting countries). 49% of reporting countries indicated that they do not collect direct economic loss to cultural heritage damaged or destroyed and 14% did not respond.

Baseline development: 15 countries (representing 17% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 98% of reporting countries; Capacity – 75%; and Technology transfer – 73%. Note that 51% of reporting countries responded to this question.

Alternative data for indicator C6:

C6a: Number of cultural heritage mobile and non-mobile assets damaged or destroyed by disasters

Current data availability: Data for 'number of cultural heritage mobile and non-mobile assets damaged or destroyed by disasters' are currently available in 23 countries (representing 26% of reporting countries). 60% of reporting countries indicated that they do not collect the number of cultural heritage mobile and non-mobile assets damaged or destroyed and 14% did not respond.

C6b: Costs of reconstruction and/or rehabilitation of damaged and/or destroyed cultural heritage assets

Current data availability: Data for the 'costs of reconstruction and/or rehabilitation of damaged and/or destroyed cultural heritage assets' are currently available in 24 countries (representing 27% of reporting countries). 59% of reporting countries indicated that they do not collect the costs of reconstruction and/or rehabilitation of damaged and/or destroyed cultural heritage assets and 14% did not respond.

Summary Target C

Of those countries that reported to the *Review,* the percentages that collect data are as follows:

- ▫ 68% on *direct losses to agriculture*
- ▫ 41% on *direct economic loss due to all other damaged or destroyed productive assets attributed to disasters*
- ▫ 51% on *direct economic loss in the housing sector attributed to disaster*
- ▫ 69% on *damaged and destroyed dwellings*, which can be used as a proxy
- ▫ 47% on *direct economic loss resulting from damaged or destroyed critical infrastructure*
- ▫ 55% on the *number of other destroyed or damaged critical infrastructure units and facilities*
- ▫ 65% on the *number of health and educational facilities destroyed or damaged by disasters.*
- ▫ 39% on the *number of people whose livelihoods that were disrupted or destroyed attributed to disasters*
- ▫ 68% on *physical damage to livelihoods*, which can be used as a proxy, when combined with population data.

The percentage of countries reporting to the *Review* able to develop a baseline with existing 2005-2015 data is as follows:

- ▫ 45% on *losses to agriculture*
- ▫ 29% for *direct economic losses to productive assets*
- ▫ 31% for *direct economic loss in the housing sector*
- ▫ 45% for *physical damage to livelihood*
- ▫ 25% for *number of people with livelihoods disrupted or destroyed*

33-36% of countries are able to disaggregate productive assets loss data into *commercial facilities, industrial facilities and tourism facilities.*

Global 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.

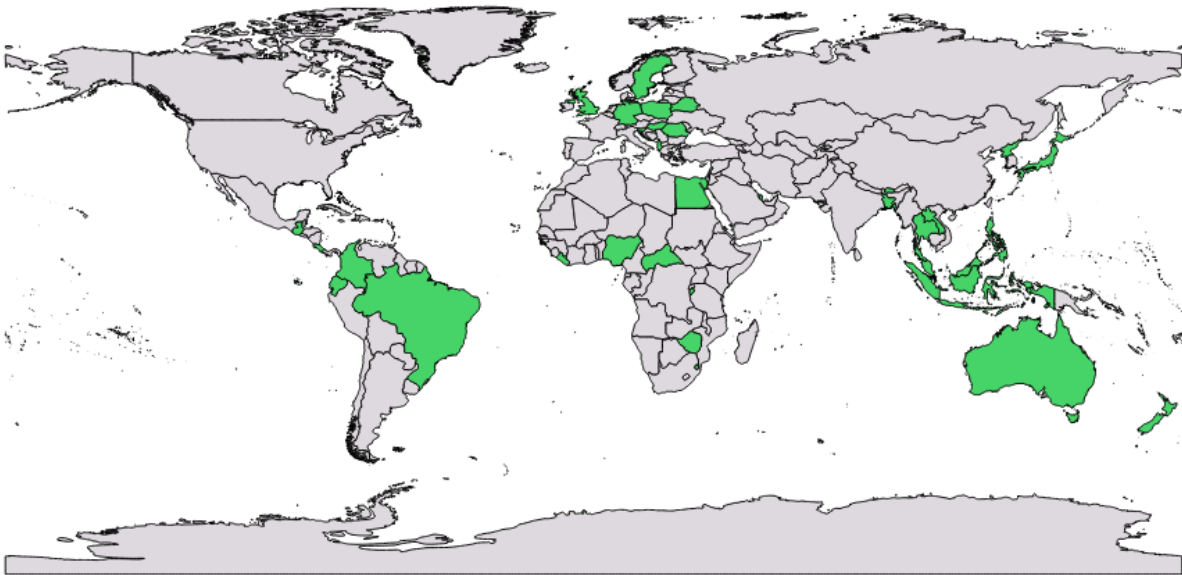*Indicator D2: Number of destroyed or damaged health facilities attributed to disasters*
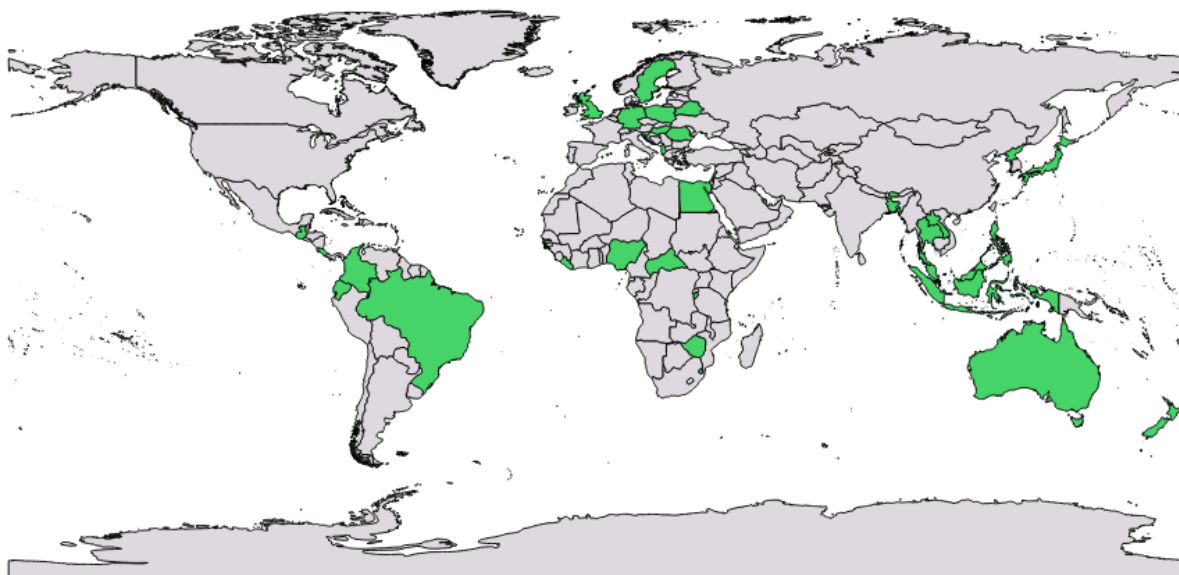
Data availability Indicator D-2 (Damaged or destroyed health facilities)

Current data availability: Data for 'number of health facilities destroyed or damaged' are currently available in 56 countries (representing 64% of reporting countries). 22% of reporting countries indicated that they do not collect the number of health facilities destroyed or damaged and 14% did not respond.

Baseline development: 35 countries (representing 40% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 86% of reporting countries; Capacity – 71%; and Technology transfer – 67%. Note that only 24% of reporting countries responded to this question.
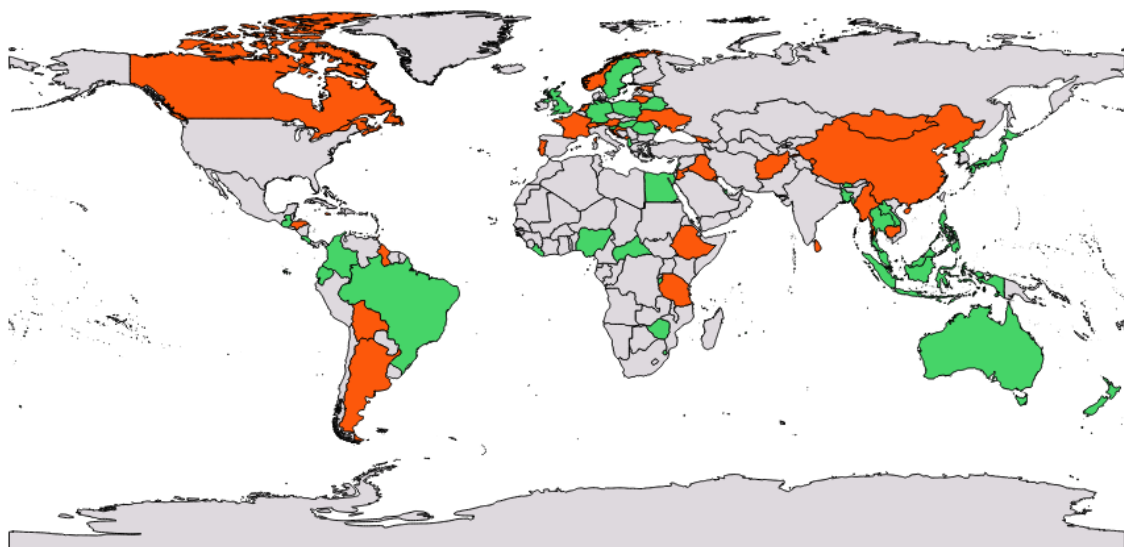
Indicator D3: Number of destroyed or damaged educational facilities attributed to disasters

Data availability Indicator D-3 (Damaged or destroyed educational facilities)

Current data availability: Data for 'number of educational facilities destroyed or damaged' are currently available in 56 countries (representing 64% of reporting countries).   22% of reporting countries indicated that they do not collect the number of educational facilities destroyed or damaged and 14% did not respond.

Baseline development: 36 countries (representing 41% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 90% of reporting countries; Capacity – 70%; and Technology transfer – 65%. Note that only 23% of reporting countries responded to this question.

Indicator D4: Number of other destroyed or damaged critical infrastructure units and facilities attributed to disasters

Data availability Indicator D-4 (Damaged or destroyed critical infrastructure units and facilities)

Current data availability: Data for 'number destroyed or damaged critical infrastructure units and facilities' are currently available in 48 countries (representing 55% of reporting countries). 30% of reporting countries indicated that they do not collect the number of destroyed or damaged critical infrastructure units and facilities and 15% did not respond.

Baseline development: 29 countries (representing 33% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 96% of reporting countries; Capacity – 77%; and Technology transfer – 73%. Note that only 31% of reporting countries responded to this question.
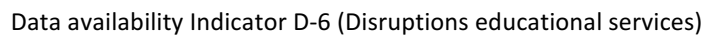
Alternative data for indicator D4:

D4a: Number of kilometres of roads destroyed or damaged by disasters

Current data availability: Data for 'number of kilometres of roads destroyed or damaged' are currently available in 38 countries (representing 44% of reporting countries). 11% of reporting countries indicated that they do not collect the number of kilometres of roads destroyed or damaged and 45% did not respond.

22 countries provided additional information on ***Other data on critical infrastructure damaged and destroyed collected***, namely:
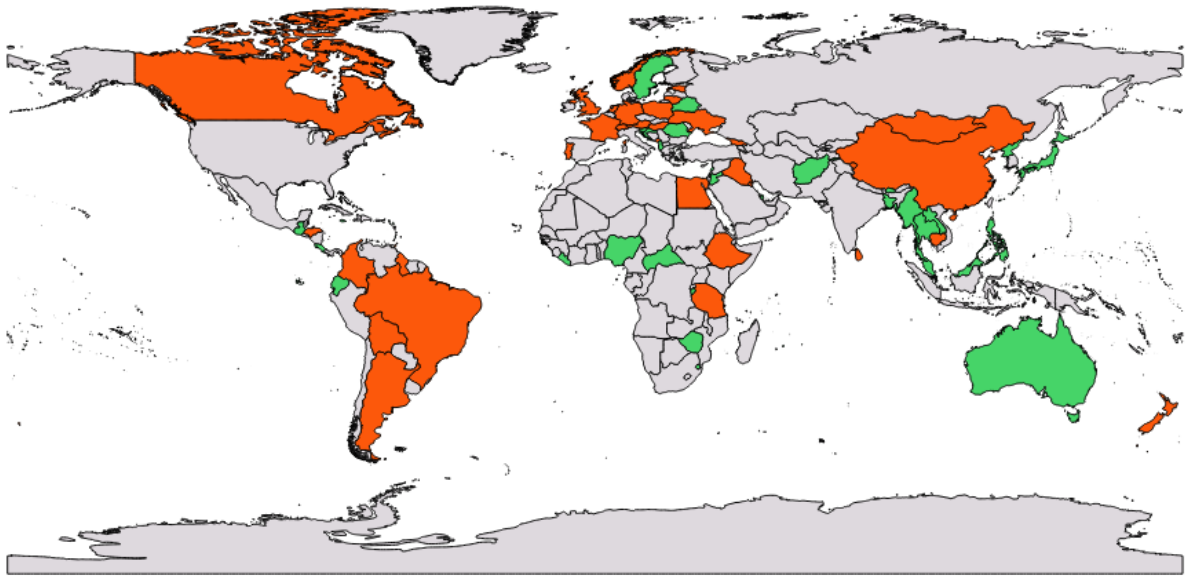
- Sewage systems, water pipes
- Bridges
- Ports airports
- Power supply
- Telecommunication installation
- Drainage systems

Indicator D6: Number of disruptions to educational services attributed to disasters

Data availability Indicator D-6 (Disruptions educational services)

Current data availability: Data for 'number of disruptions to educational services attributed to disasters' are currently available in 39 countries (representing 45% of reporting countries). 40% of reporting countries indicated that they do not collect the number of disruptions to educational services attributed to disasters and 15% did not respond.

Baseline development: 25 countries (representing 29% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 95% of reporting countries; Capacity – 78%; and Technology transfer – 76%. Note that only 43% of reporting countries responded to this question.

Indicator D7: Number of disruptions to health services attributed to disasters
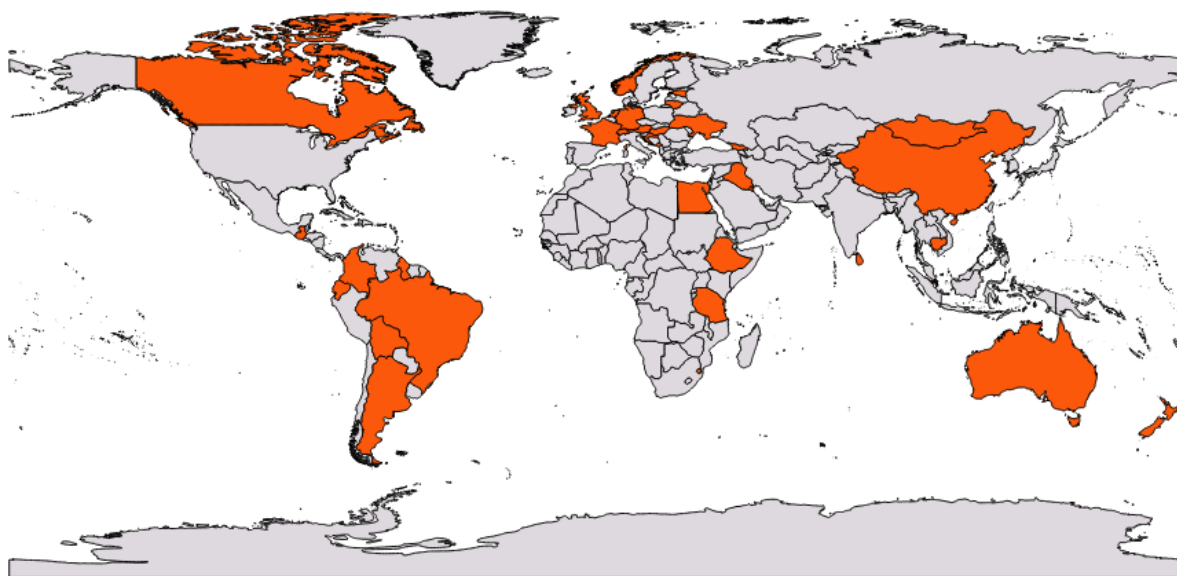

Data availability Indicator D-7 (Disruptions health services)

Current data availability: Data for 'number of disruptions to health services attributed to disasters' are currently available in 39 countries (representing 45% of reporting countries). 40% of reporting countries indicated that they do not collect the number of disruptions to health services attributed to disasters and 15% did not respond.

Baseline development: 26 countries (representing 30% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 94% of reporting countries; Capacity – 78%; and Technology transfer – 75%. Note that only 41% of reporting countries responded to this question.

Indicator D8: Number of disruptions to other basic services attributed to disasters

Data availability Indicator D-8 (Disruptions other basic services)

Current data availability: Data for 'number of disruptions to other basic services attributed to disasters' are currently available in 37 countries (representing 43% of reporting countries). 41% of reporting countries indicated that they do not collect the number of disruptions to other basic services attributed to disasters and 16% did not respond.

Baseline development: 21 countries (representing 30% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 92% of reporting countries; Capacity – 75%; and Technology transfer – 75%. Note that only 41% of reporting countries responded to this question.

Alternative data for indicator D8

D8a: Number of disruptions to water supply by disasters

Current data availability: Data for 'number of disruptions to water supply by disasters' are currently available in 33 countries (representing 38% of reporting countries).   5% of reporting countries indicated that they do not collect the number of disruptions to water supply by disasters and 57% did not respond.

D8b: Number of disruptions to sewerage system by disasters

Current data availability: Data for 'number of disruptions to sewerage system by disasters' are currently available in 27 countries (representing 31% of reporting countries).   12% of reporting countries indicated that they do not collect the number of disruptions to sewerage system by disasters and 57% did not respond.

D8c: Number of disruptions to communication by disasters

Current data availability: Data for 'number of disruptions to communication by disasters' are currently available in 34 countries (representing 39% of reporting countries). 4% of reporting countries indicated that they do not collect the number of disruptions to communication by disasters and 57% did not respond.

D8d: Number of disruptions to power and energy by disasters

Current data availability: Data for 'number of disruptions to power and energy by disasters' are currently available in 35 countries (representing 40% of reporting countries). 3% of reporting countries indicated that they do not collect the number of disruptions to power and energy by disasters and 57% did not respond.

D8e: Number of disruptions to transportation by disasters

Current data availability: Data for 'number of disruptions to transportation by disasters' are currently available in 33 countries (representing 38% of reporting countries). 5% of reporting countries indicated that they do not collect the number of disruptions to transportation by disasters and 57% did not respond.

Summary Target D

Of those countries that reported to the *Review,* the percentages that collect data are as follows:

   ▫ 64% on *the number of destroyed or damaged health* and *educational facilities attributed to disasters*
   ▫ 55% on *destroyed or damaged critical infrastructure units and facilities attributed to disasters*
   ▫ 45% on *number of disruptions to educational services attributed to disasters*
   ▫ 45% on *number of disruptions to health services attributed to disasters*
   ▫ 43% on *number of disruptions to other basic services attributed to disasters*

33-40% of countries able to disaggregate by *type of the basic services being disrupted* (namely communication, water supply, transportation, sewerage systems and power and energy).

The percentage of countries reporting to the *Review* able to develop a baseline with existing 2005-2015 data is as follows:

   ▫ 40% for *losses to health and education*
   ▫ 33% for *damage to critical infrastructure units and facilities*
   ▫ 30% for *disruptions to health, education and other basic services*

Global target E: Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020.

Indicator E1: Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030
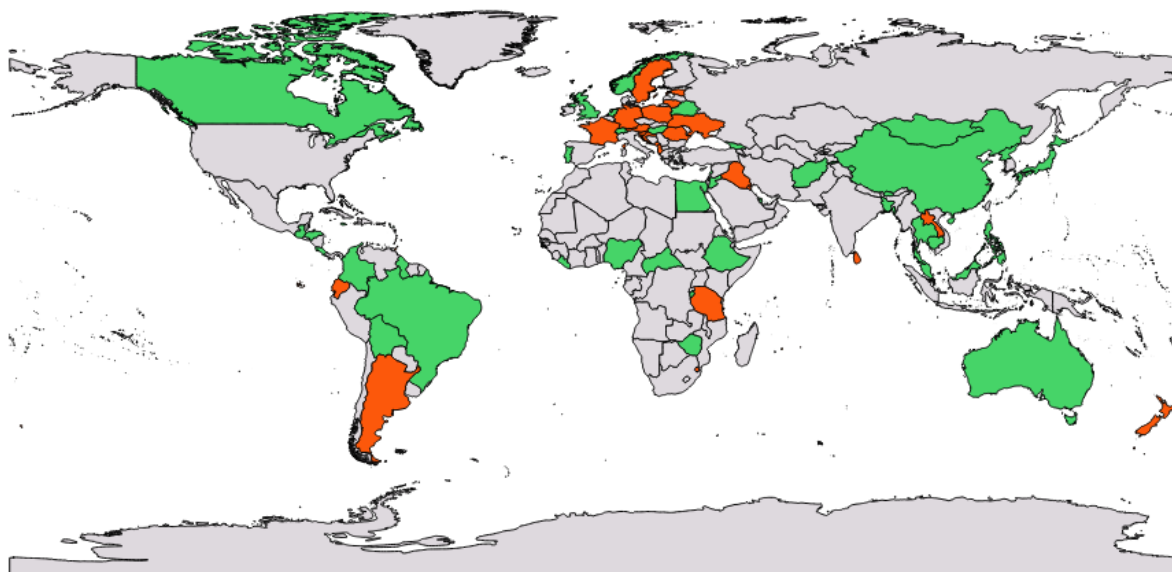
Data availability Indicator E-1 (National DRR Strategies)

Current data availability: Data for 'number of countries that adopt and implement national disaster risk reduction strategies' are currently available in 47 countries (representing 54% of reporting countries). 30% of reporting countries indicated that they do not collect the number of countries that adopt and implement national disaster risk reduction strategies and 16% did not respond.

Resources needed to collect data: Financial resources – 96% of reporting countries; Capacity – 70%; and Technology transfer – 59%. Note that only 31% of reporting countries responded to this question.

The assumption in the questionnaire of the *Review* was that few countries demonstrated aligned national disaster risk reduction strategies, and so countries were asked what resources were required for national strategies to be comprehensively aligned with the Sendai Framework.

Additional data for indicator E1

The additional data pertain to the key elements of the indicator, and the ten core requirements for national disaster risk reduction strategies that allow qualitative measurement of the degree to which strategies are in line with the Sendai Framework.

E1a: National DRR strategy adopted

Current data availability: Data for 'number of countries that adopt national disaster risk reduction strategies' are currently available in 43 countries (representing 49% of reporting countries). 7% of

reporting countries indicated that they do not collect data on adoption of national disaster risk reduction strategies and 44% did not respond.

Resources needed to collect data: Financial resources – 86% of reporting countries; Capacity – 86%; and Technology transfer – 57%. Note that only 8% of reporting countries responded to this question.

E1b: National DRR strategy implemented

Current data availability: Data for 'number of countries that implement national disaster risk reduction strategies' are currently available in 33 countries (representing 38% of reporting countries). 9% of reporting countries indicated that they do not collect data on the implementation of national disaster risk reduction strategies and 53% did not respond.

Resources needed to collect data: Financial resources – 88% of reporting countries; Capacity – 88%; and Technology transfer – 88%. Note that only 9% of reporting countries responded to this question.

E1c: National DRR strategy has a clear time frame

Current data availability: Data for 'national DRR strategy has a clear time frame' are currently available in 29 countries (representing 33% of reporting countries). 4% of reporting countries indicated that they do not collect data on the timeframe of the national DRR strategy and 63% did not respond.

E1d: National DRR strategy has clear targets

Current data availability: Data for 'national DRR strategy has clear targets' are currently available in 28 countries (representing 32% of reporting countries). 5% of reporting countries indicated that they do not collect data on the targets of the national DRR strategy and 63% did not respond.

E1e: National DRR strategy has indicators

Current data availability: Data for 'national DRR strategy has indicators' are currently available in 22 countries (representing 26% of reporting countries). 11% of reporting countries indicated that they do not collect data on the indicators of the national DRR strategy and 63% did not respond.

E1f: National DRR strategy integrates DRR within and across sectors

Current data availability: Data for 'national DRR strategy integrates DRR within and across sectors' are currently available in 32 countries (representing 37% of reporting countries). None of the reporting countries indicated that they do not collect data on the integration of the national DRR strategy within and across sectors and 63% did not respond.

E1g: National DRR strategy embedded within and across all sectors

Current data availability: Data for 'national DRR strategy embedded within and across sectors' are currently available in 30 countries (representing 34% of reporting countries). 3% of reporting countries indicated that they did not collect data on the embedding of the national DRR strategy within and across sectors and 63% did not respond.

E1h: National DRR strategy promotes policy coherence and compliance

Current data availability: Data for 'national DRR strategy promotes policy coherence and compliance' are currently available in 32 countries (representing 37% of reporting countries). None of the reporting countries indicated that they did not collect data on the national DRR strategy's promotion of policy coherence and compliance and 63% did not respond.

E1i: National DRR strategy defines roles and responsibilities

Current data availability: Data for 'national DRR strategy defines roles and responsibilities' are currently available in 30 countries (representing 34% of reporting countries). 3% of reporting countries indicated that they did not collect data pertaining to the national DRR strategy defining roles and responsibilities and 63% did not respond.

E1j: National DRR strategy prevents the creation of new risk

Current data availability: Data for 'national DRR strategy prevents the creation of new risk' are currently available in 28 countries (representing 32% of reporting countries). 5% of reporting countries indicated that they did not collect data pertaining to the national DRR strategy preventing the creation of new risk and 63% did not respond.

E1k: National DRR strategy reduces existing risk

Current data availability: Data for 'national DRR strategy reduces existing risk' are currently available in 32 countries (representing 37% of reporting countries). None of the reporting countries indicated that they did not collect data pertaining to the national DRR strategy reducing existing risk and 63% did not respond.

E1l: National DRR strategy strengthens economic, social, health and environmental resilience

Current data availability: Data for 'national DRR strategy strengthens economic, social, health and environmental resilience' are currently available in 31 countries (representing 36% of reporting countries). 1% of reporting countries indicated that they did not collect data pertaining to the national DRR strategy strengthening economic, social, health and environmental resilience and 63% did not respond.

E1m: National DRR strategy based on disaster risk assessment

Current data availability: Data for 'national DRR strategy based on disaster risk assessment' are currently available in 29 countries (representing 33% of reporting countries). 4% of reporting countries indicated that they do not collect data pertaining to the national DRR strategy being based on disaster risk assessment and 63% did not respond.

E1n: National DRR strategy has a mechanism for follow-up

Current data availability: Data for 'national DRR strategy has a mechanism for follow-up' are currently available in 31 countries (representing 36% of reporting countries). 1% of reporting countries indicated that they did not collect data on the national DRR strategy having a mechanism for follow-up and 63% did not respond.

Indicator E2: Percentage of local governments that adopt and implement local disaster risk reduction strategies in line with national strategies
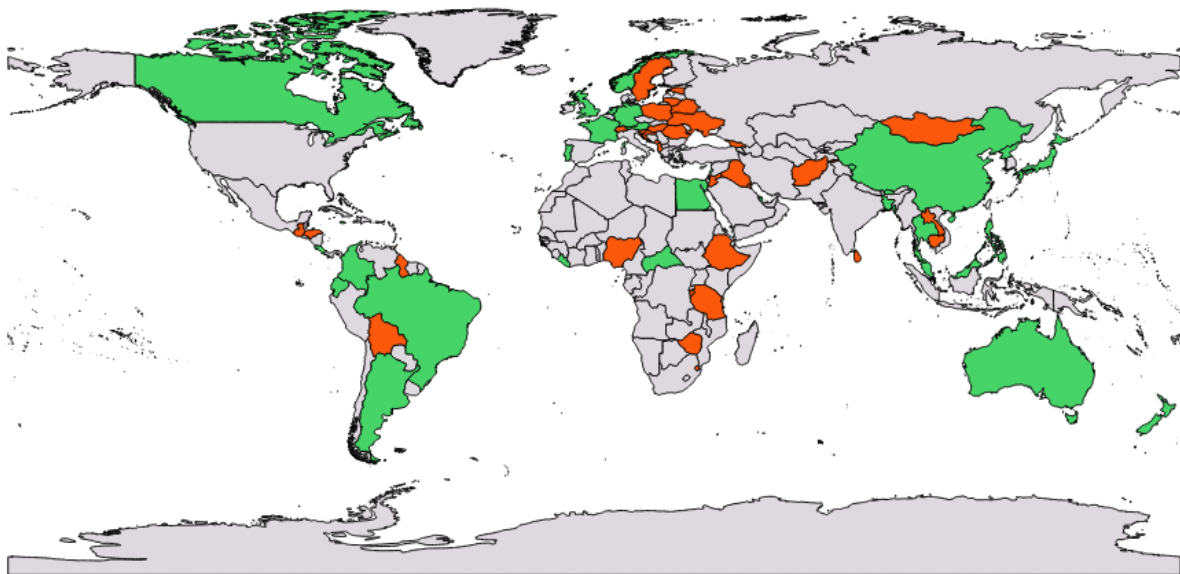
Data availability Indicator E-2 (Local DRR Strategies led by local government)

Current data availability: 34 countries (39% of reporting countries) are reporting that there are local DRR strategies led by local governments. Of those that reported in the *Review*, 10 (11% of reporting countries) indicate that the percentage of local governments with DRR strategies is between 50% and 100% coverage, with the remainder ranging between 0 and 30%.

Resources needed to collect data: Financial resources – 92% of reporting countries; Capacity – 89%; and Technology transfer – 76%. Note that only 31% of reporting countries responded to this question.

The assumption in the questionnaire of the *Review* was that few countries could report that all local disaster risk reduction strategies were aligned with the Sendai Framework, and so countries were asked what resources were required for comprehensive alignment of all local strategies.

E2a: Local DRR strategies adopted

Current data availability: Data for the 'number of local governments that adopt local disaster risk reduction strategies' are currently available in 29 countries (representing 33% of reporting countries). 5% of reporting countries indicated that they do not collect data on the number of local governments adopting local disaster risk reduction strategies and 62% did not respond.

Resources needed to collect data: Financial resources – 100% of reporting countries; Capacity – 80%; and Technology transfer – 20%. Note that only 6% of reporting countries responded to this question.

E2b: Local DRR strategies aligned to national DRR strategy

Current data availability: Data for 'number of local disaster risk reduction strategies that are aligned with national disaster risk reduction strategies' are currently available in 26 countries (representing 30% of reporting countries). 4% of reporting countries indicated that they do not collect data on the

alignment of local disaster risk reduction strategies with national disaster risk reduction strategies and 66% did not respond.

Resources needed to collect data: Financial resources – 100% of reporting countries; Capacity – 33%; and Technology transfer – 33%. Note that only 3% of reporting countries responded to this question.

E2c: Local DRR strategies implemented

Current data availability: Data for the 'number of local governments that implement local disaster risk reduction strategies' are currently available in 22 countries (representing 25% of reporting countries). 4% of reporting countries indicated that they do not collect data on the number of local governments implementing local disaster risk reduction strategies and 71% did not respond.

Resources needed to collect data: Financial resources – 100% of reporting countries; Capacity – 100%; and Technology transfer – 33%. Note that only 3% of reporting countries responded to this question.

Summary Target E

Of those countries that reported to the *Review,* the percentages that collect data are as follows:

- ▫ 54% on *number of countries that adopt and implement national disaster risk reduction strategies*
- ▫ 49% on *number of countries that adopt national disaster risk reduction strategies*
- ▫ 38% on *number of countries that implement national disaster risk reduction strategies*
- ▫ 33-37% of countries report that their strategies fulfil additional requirements.

- ▫ 39% on *percentage of local governments that adopt and implement local disaster risk reduction strategies in line with national strategies*

- ▫ 33% on *number of local governments that adopt local disaster risk reduction strategies*
- ▫ 30% on *number of local disaster risk reduction strategies that are aligned with national disaster risk reduction strategies*
- ▫ 25% on *number of local governments that implement local disaster risk reduction strategies*

Global 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

Indicator F1: Total official international support, (official development assistance (ODA) plus other official flows), for national disaster risk reduction actions
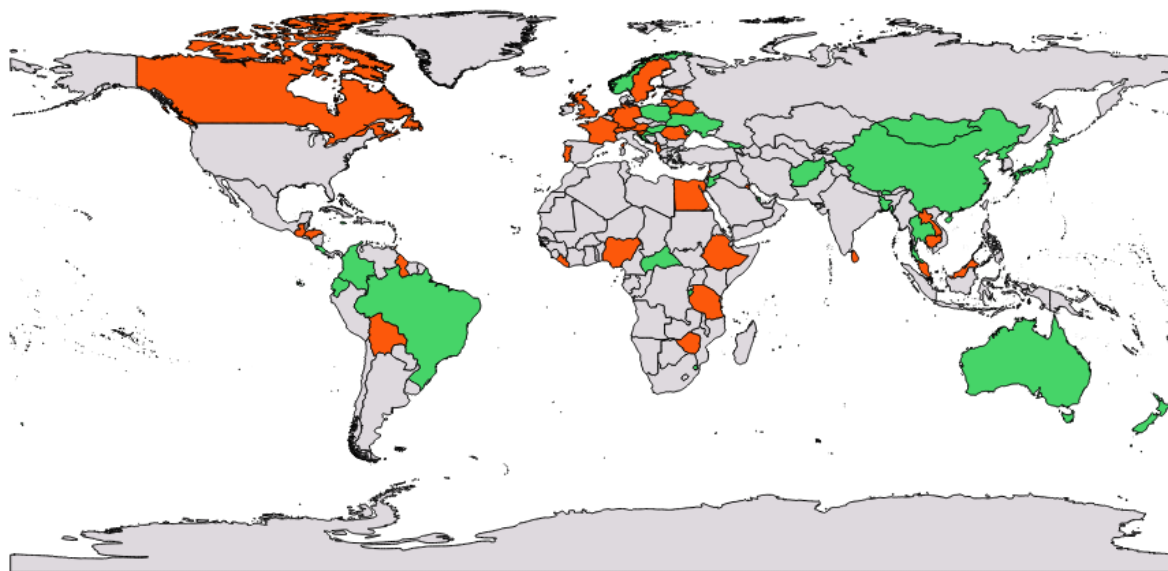
Data availability Indicator F-1 (total official ODA support for national DRR actions)
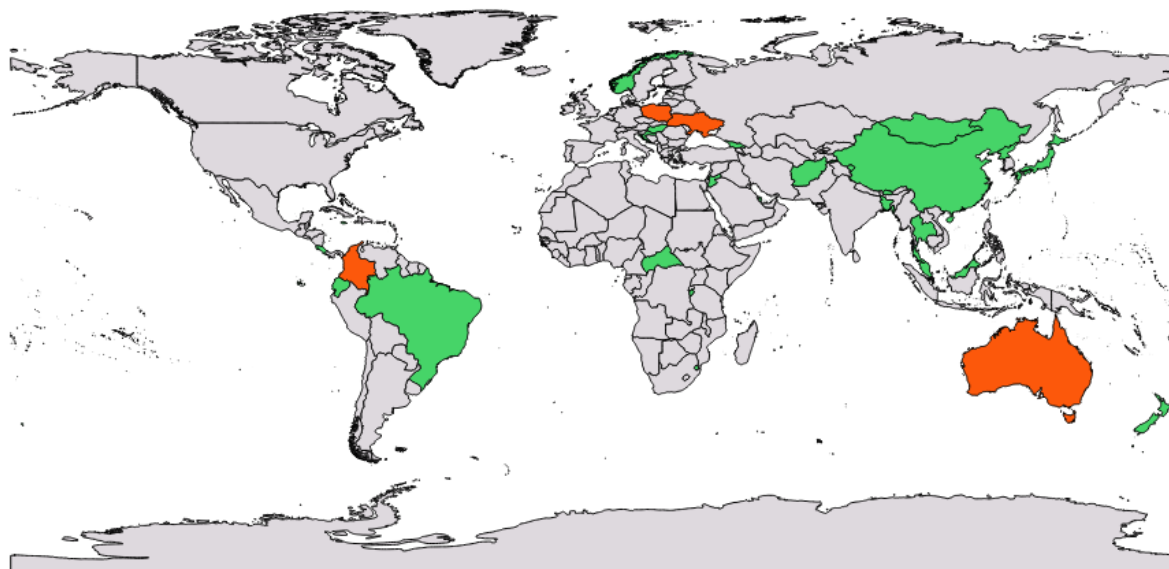
Current data availability: Data for 'total official international support (ODA plus other official flows) for national disaster risk reduction actions' are currently available in 33 countries (representing 38% of reporting countries). 38% of countries collect data on ODA and only 26% also collect data on 'other official flows'. 42% of reporting countries indicated that they do not collect data on total official international support for national disaster risk reduction actions and 20% did not respond.

Baseline development: 21 countries (representing 24% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data – in respect of ODA: Financial resources – 92% of reporting countries; Capacity – 73%; and Technology transfer – 62%. Note that only 43% of reporting countries responded to this question

Resources needed to collect data – in respect of 'other official flows': Financial resources – 93% of reporting countries; Capacity – 67%; and Technology transfer – 67%. Note that 53% of reporting countries responded to this question

Indicator F2: Total official international support (ODA plus other official flows) for national disaster risk reduction actions provided by multilateral agencies

Data availability Indicator F-2 (support from multilateral agencies)

Current data availability: Data for 'total official international support (ODA plus other official flows) for national disas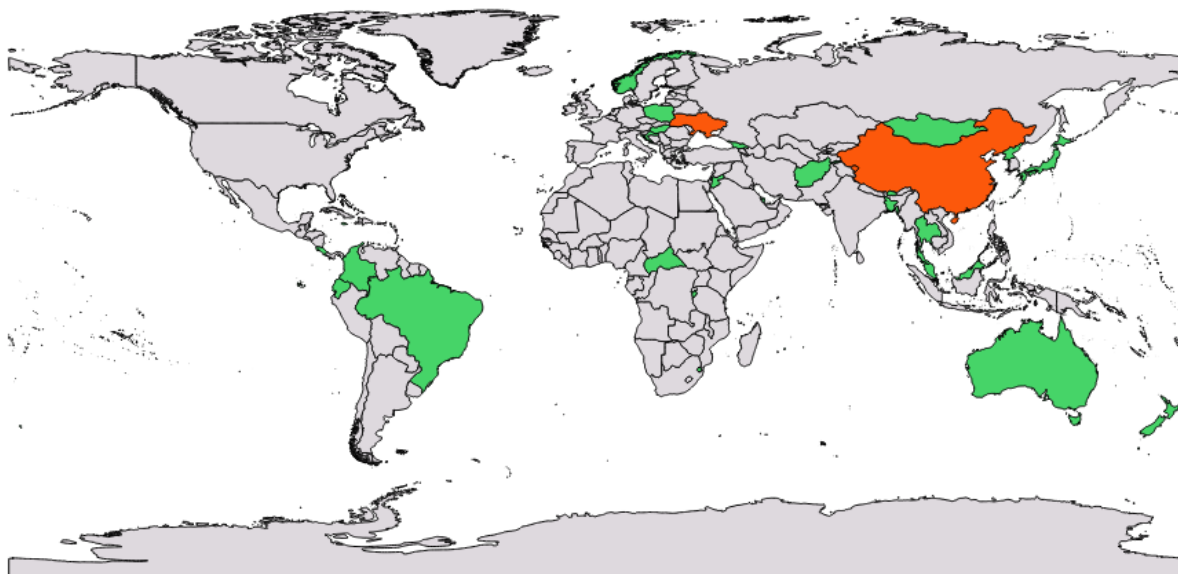ter risk reduction actions provided by multilateral agencies' are currently available in 33 countries (representing 38% of reporting countries). 43% of reporting countries indicated that they do not collect data on total official international support for national disaster risk reduction actions provided by multilateral agencies and 19% did not respond. All 33 countries reporting availability of data, collect data on ODA, and 23 countries (representing 26% of reporting countries) collect data on 'other official flows' provided by multilateral agencies.

Baseline development: 21 countries (representing 24% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 93% of reporting countries; Capacity – 73%; and Technology transfer – 62%. Note that 53% of reporting countries responded to this question.

Indicator F3: Total official international support (ODA plus other official flows) for national disaster risk reduction actions provided bilaterally

Data availability Indicator F-3 (data on support from bilateral sources)
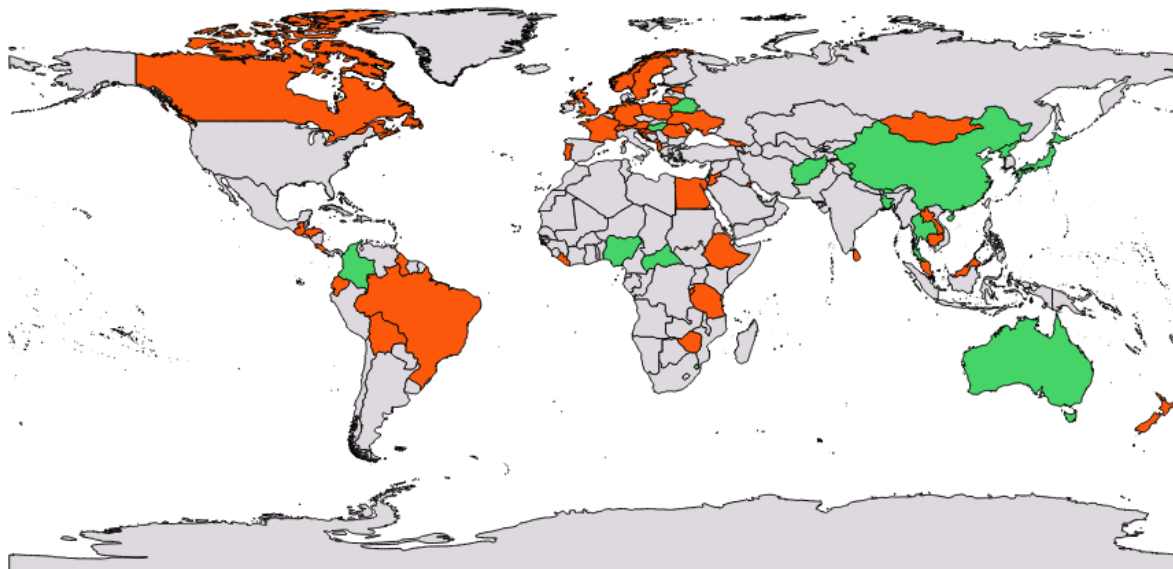
Current data availability: Data for 'total official international support (ODA plus other official flows) for national disaster risk reduction actions provided bilaterally' are currently available in 32 countries (representing 37% of reporting countries). 2% of reporting countries indicated that they do not collect data on total official international support for national disaster risk reduction actions provided bilaterally and 61% did not respond. 20 of the 32 countries reporting availability of data, collect data on ODA (representing 23% of reporting countries), and 17 countries (representing 20% of reporting countries) collect data on 'other official flows' provided bilaterally.

Baseline development: 21 countries (representing 24% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 93% of reporting countries; Capacity – 73%; and Technology transfer – 62%. Note that 53% of reporting countries responded to this question.

Very few countries collect data on support from other sources; exemplars of data sources include: projects, programmes, private sector and research organizations.

Indicator F4: Total official international support (ODA plus other official flows) for the transfer and exchange of disaster risk reduction-related technology
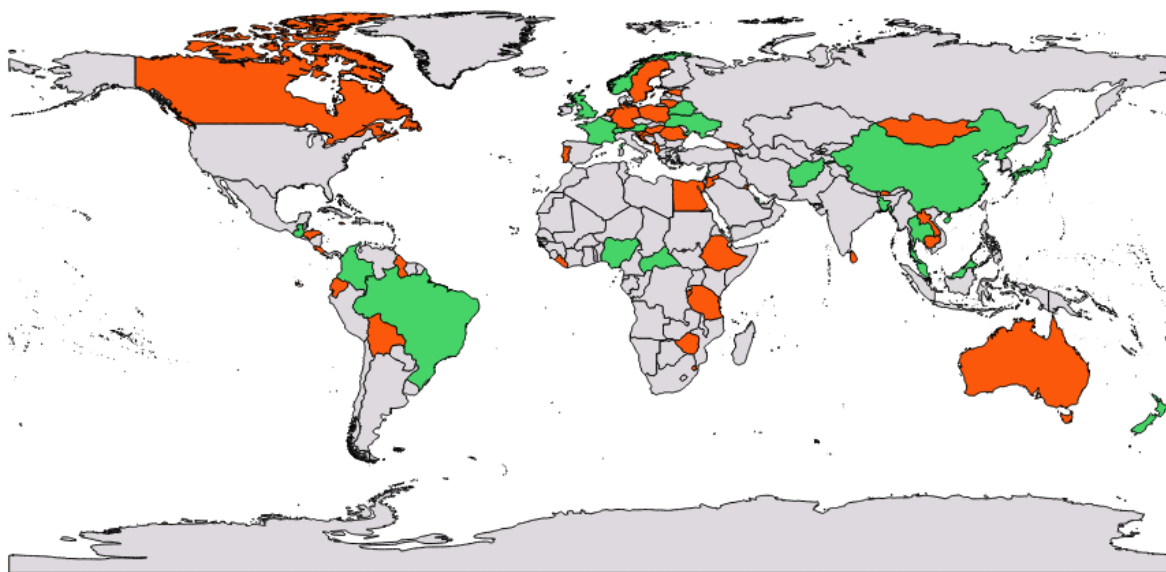

Data availability Indicator F-4 (ODA support for the transfer and exchange of DRR related technology)

Current data availability: Data for 'total official international support (ODA plus other official flows) for the transfer and exchange of DRR related technology' are currently available in 20 countries (representing 23% of reporting countries). 56% of reporting countries indicated that they do not collect data on total official international support for the transfer and exchange of DRR related technology and 21% did not respond. All 20 countries reporting the availability of data, collect ODA (representing 23% of reporting countries), and 16 countries (representing 18% of reporting countries) collect data on 'other official flows'.

Baseline development: 21 countries (representing 24% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 94% of reporting countries; Capacity – 65%; and Technology transfer – 72%. Note that only 31% of reporting countries responded to this question.

Indicator F5: 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
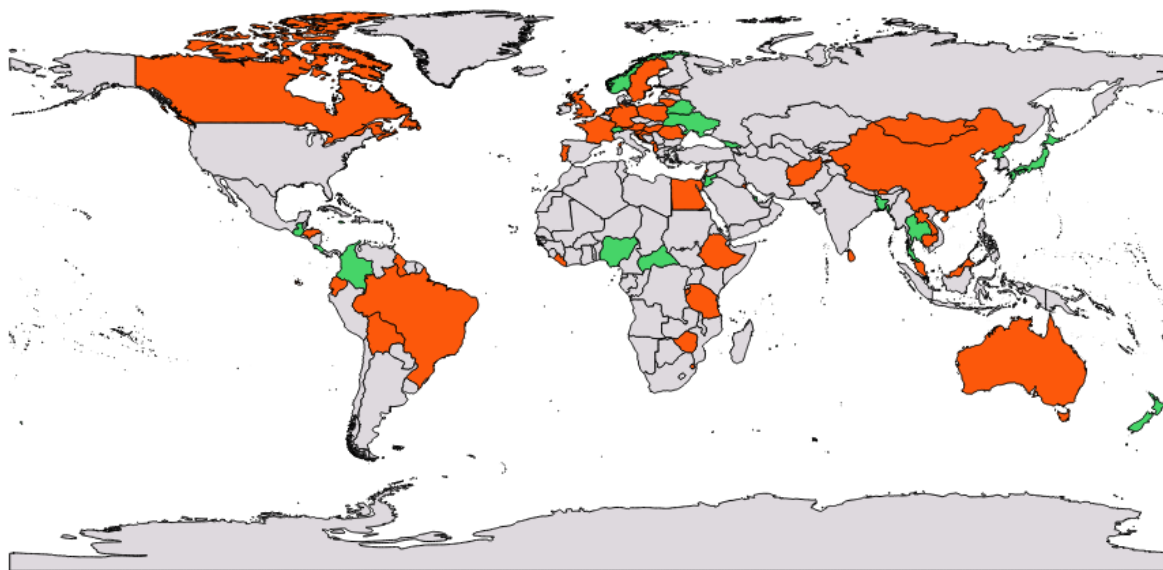

Data availability Indicator F-5 (number of programmes and initiatives for the transfer and exchange of science, technology and innovation in disaster risk reduction for developing countries)

Current data availability: Data on the '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' are currently available in 26 countries (representing 30% of reporting countries). 49% of reporting countries indicated that they do not collect data on the 'number of international, regional and bilateral programmes and initiatives' and 21% did not respond. 23 of the 26 countries (26% of reporting countries) reporting availability of data, collect number of international and regional initiatives, of which 21 countries (24% of reporting countries) collect data on bilateral initiatives.

Baseline development: 24 countries (representing 28% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 95% of reporting countries; Capacity – 70%; and Technology transfer – 72%. Note that 49% of reporting countries responded to this question.

Indicator F6: Total official international support (ODA plus other official flows) for disaster risk reduction capacity-building
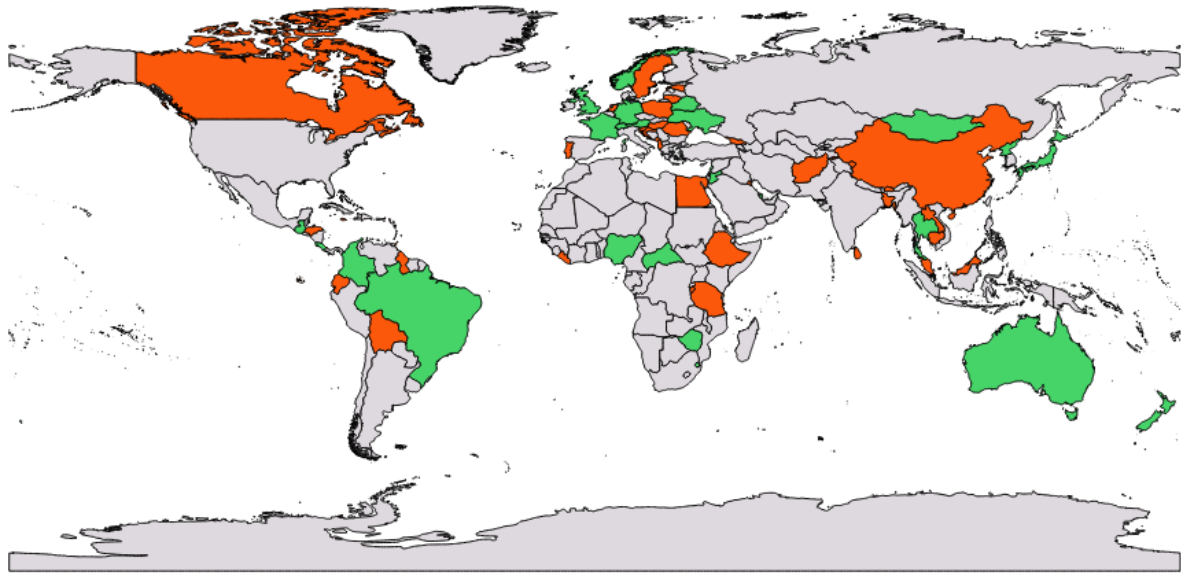

Data availability Indicator F-6 (total official ODA support for disaster risk reduction capacity building)

Current data availability: Data for 'total official international support (ODA plus other official flows) for disaster risk reduction capacity-building' are currently available in 26 countries (representing 30% of reporting countries). 49% of reporting countries indicated that they do not collect data on total official international support for disaster risk reduction capacity-building and 21% did not respond. All 26 countries reporting availability of data, collect data on ODA, and 20 countries (23% of reporting countries) collect data on 'other official flows'.

Baseline development: 20 countries (representing 23% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 95% of reporting countries; Capacity – 67%; and Technology transfer – 65%. Note that 49% of reporting countries responded to this question.

Indicator F7: Number of international, regional and bilateral programmes and initiatives for disaster risk reduction-related capacity-building in developing countries

Data availability Indicator F-7 (number of programmes and initiatives for DRR related capacity building in developing countries)

Current data availability: Data on the 'number of international, regional and bilateral programmes and initiatives for disaster risk reduction-related capacity-b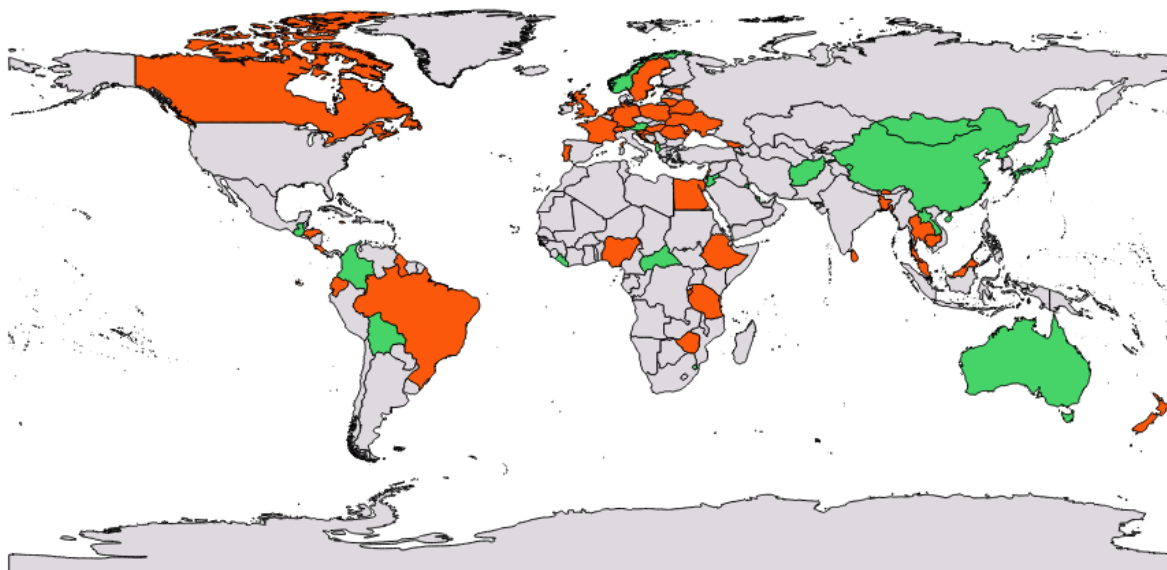uilding in developing countries' are currently available in 29 countries (representing 33% of reporting countries). 46% of reporting countries indicated that they do not collect data on the 'number of international, regional and bilateral programmes and initiatives' and 21% did not respond. 25 of the 29 countries reporting the availability of data (representing 29% of reporting countries) collect data on the number of international initiatives, 26 (representing 30% of reporting countries) on regional initiatives, and 23 (representing 26% of reporting countries) on bilateral initiatives.

Baseline development: 20 countries (representing 23% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 95% of reporting countries; Capacity – 75%; and Technology transfer – 77%. Note that 46% of reporting countries responded to this question.

Indicator F8: Number of developing countries supported by international, regional and bilateral initiatives to strengthen their disaster risk reduction-related statistical capacity

Data availability Indicator F-8 (initiatives to strengthen your DRR related statistical capacity)

Current data availability: Data on the 'number of developing countries supported by international, regional and bilateral initiatives to strengthen their disaster risk reduction-related statistical capacity' are currently available in 25 countries (representing 29% of reporting countries). 51% of reporting countries indicated that they do not collect data on the 'number of international, regional and bilateral programmes and initiatives' and 21% did not respond. 17 of the 25 countries reporting availability of data (20% of reporting countries) specify that they collect data on 'international and regional programmes and initiatives' and 18 (21% of reporting countries) on 'bilateral programmes and initiatives'.

Baseline development: 16 countries (representing 18% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 95% of reporting countries; Capacity – 68%; and Technology transfer – 68%. Note that 51% of reporting countries responded to this question.

Summary Target F

Critical gaps exist in the ability of countries to collect data required to report on the recommended indicators for Target F. Of those countries that reported to the *Review,* the percentages that collect data are as follows:

- ▫ 38% on *total official international support (ODA plus other official flows) for national disaster risk reduction actions provided by multilateral agencies*
- ▫ 37% on *total official international support (ODA plus other official flows) for national disaster risk reduction actions provided bilaterally*
- ▫ 23% on *total official international support (ODA plus other official flows) for the transfer and exchange of DRR related technology*
- ▫ 30% on *total official international support (ODA plus other official flows) for DRR capacity building*
- ▫ 29-33% on *the number of international, regional and bilateral programmes and initiatives for capacity building, technology transfer and support to statistical capacity in developing countries*

Between 18% and 28% of countries reporting to the *Review* are currently able to develop a baseline for monitoring these indicators. Approximately 50% of reporting countries plan to collect historical data for the further development of baselines for this Target F.

Global 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.

Indicator G2: Number of countries that have multi-hazard monitoring and forecasting systems
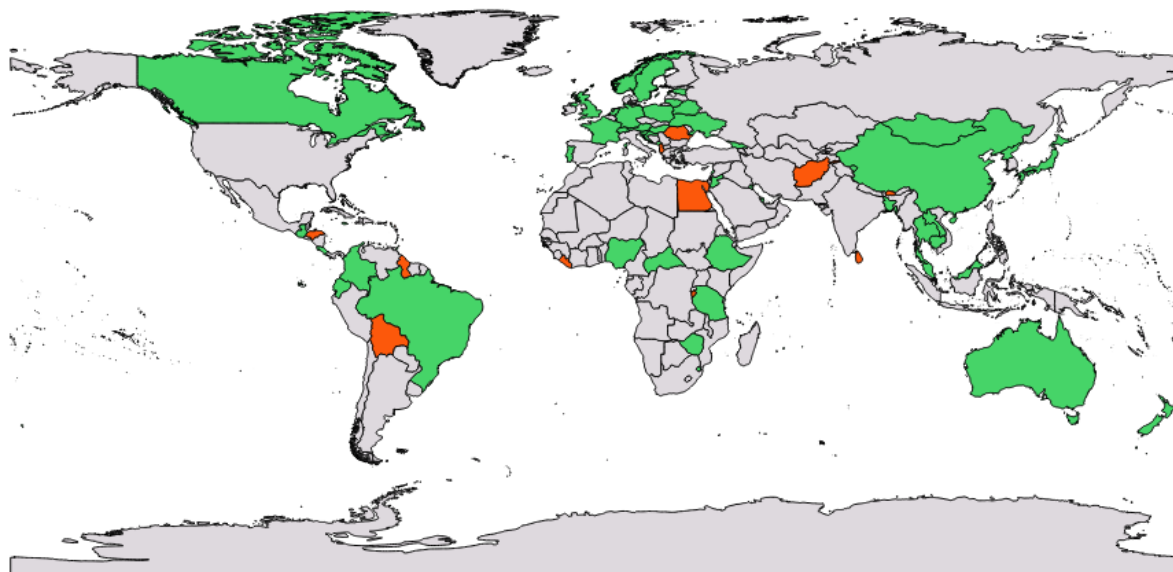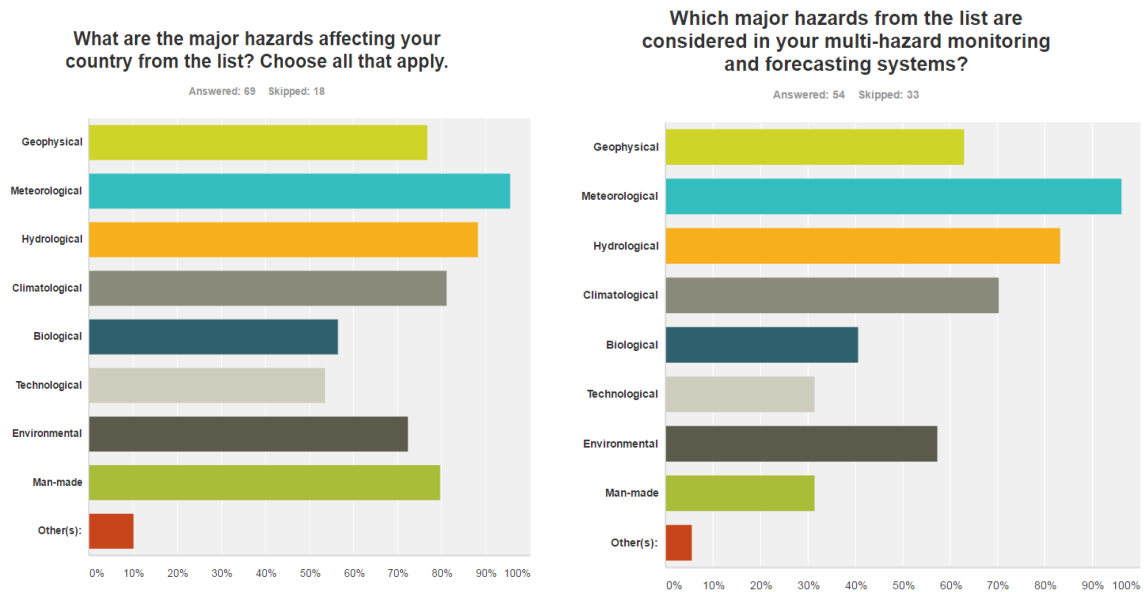

Data availability Indicator G-2 (Multi-hazard monitoring and forecasting systems)

Current data availability: Data for 'number of countries that have multi-hazard early warning systems' are currently available in 54 countries (representing 62% of reporting countries). 17% of reporting countries indicated that they do not collect data on the number of countries that have multi-hazard early warning systems (MHEWS) and 21% did not respond. 31 of the 54 countries with early warning systems, take into account the potential interrelated effects of multiple hazards.
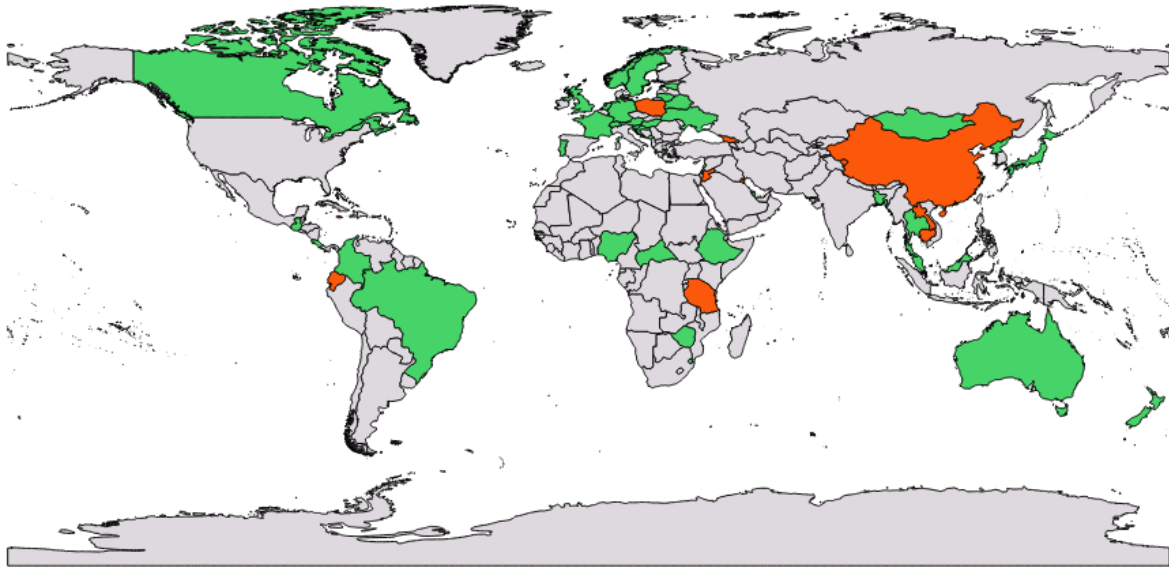
Baseline development: 20 countries (representing 23% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 94% of reporting countries; Capacity – 100%; and Technology transfer – 100%. Note that only 20% of reporting countries responded to this question.

What are the major hazards affecting your country from the list? Choose all that apply.

Answered: 69   Skipped: 18

Which major hazards from the list are considered in your multi-hazard monitoring and forecasting systems?

Answered: 54   Skipped: 33

Of the 69 Member States that gave an indication of the principle hazards affecting each country, meteorological, hydrological, climatological, man-made, geophysical and environmental hazards were identified by at least 72% of reporting countries.

These feature in the early warning systems of the 54 countries that responded. The most apparent discrepancy between affectation and inclusion in national MHEWS, is in respect of man-made hazards, where prevalence (80%) is not matched by early warning capabilities (31%).

Indicator G3: Number of people per 100,000 that are covered by early warning information through local governments or through national dissemination mechanisms

Data availability Indicator G-3 (Monitoring and forecasting systems covering all geographical areas affected by one or more of the major hazards)

Current data availability: Data for the 'number of people per 100,000 that are covered by early warning information through local governments or through national dissemination mechanisms' are currently available in 54 countries (representing 62% of reporting countries). 17% of reporting countries indicated that they do not collect data on the number of people per 100,000 that are covered by early warning information and 21% did not respond.

23 of the 54 countries with early warning systems (26% of reporting countries) collect data on the number of people who have access to early warning information through local governments, and 24 countries (28% of reporting countries) collect data on the number of people who have access to early warning information through national dissemination mechanisms.

44 of the 54 countries that have data on number of people covered by early warning information (51% of reporting countries) have data on monitoring and forecasting systems coverage of all geographical areas affected by one or more of the major hazards. 41 countries (47% of reporting countries) specify that they have data pertaining to the population in areas prone to hazards that are covered by early warning information.

Baseline development: 20 countries (representing 23% of reporting countries) reported having data to cover the entire period 2005-2015.

Resources needed to collect data: Financial resources – 93% of reporting countries; Capacity – 100%; and Technology transfer – 85%. Note that only 32% of reporting countries responded to this question.

Indicator G4: Percentage of local governments having a plan to act on early warnings
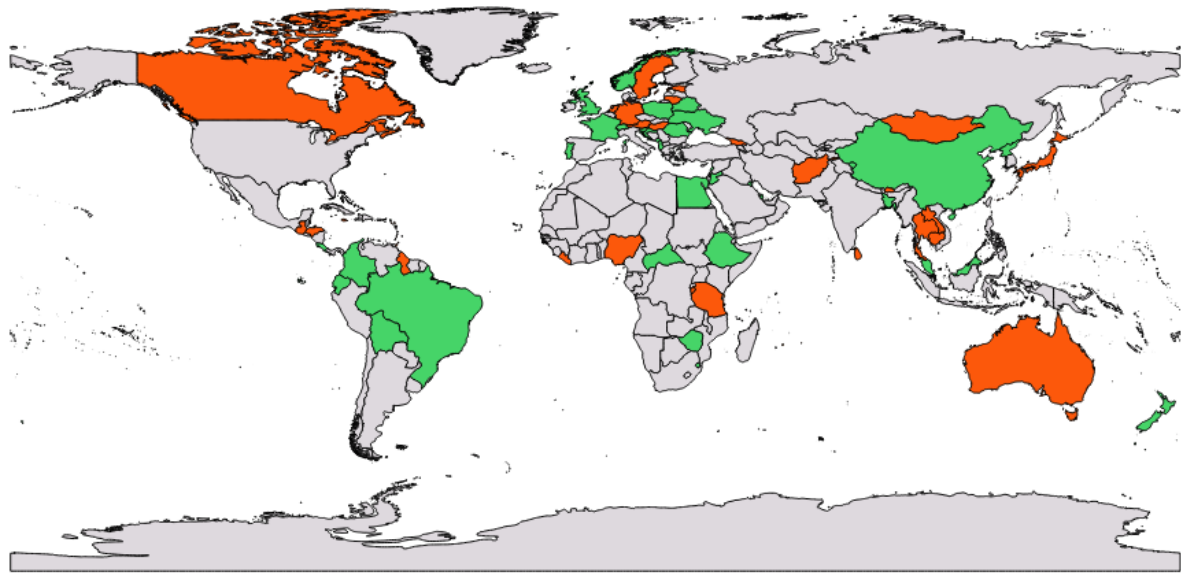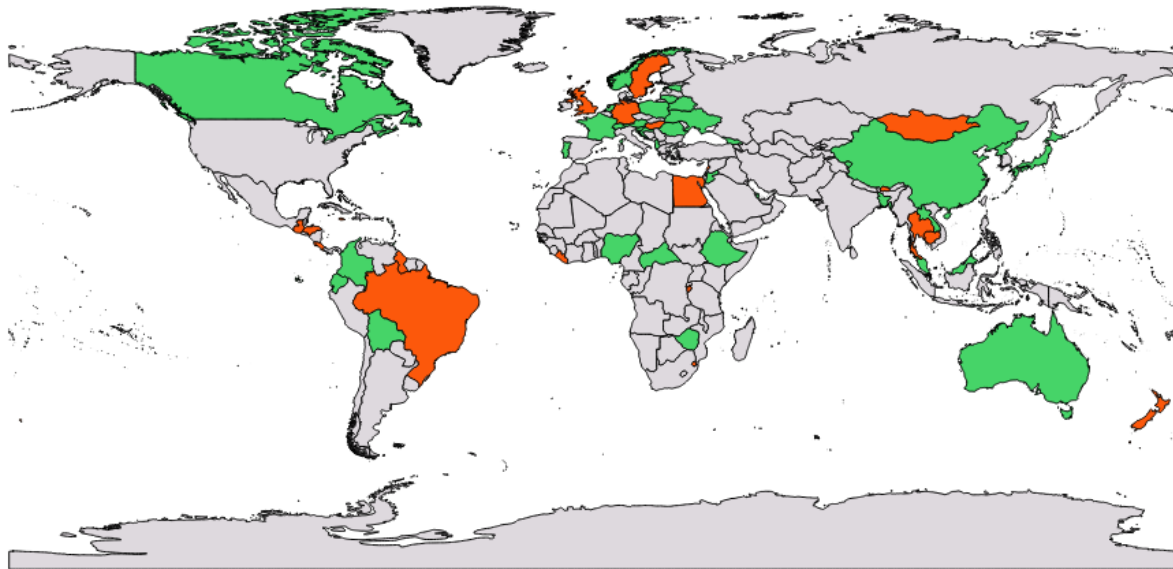

Data availability Indicator G-4 (data on percentage of local governments having a plan to act on early warnings)

Current data availability: Data on the 'percentage of local governments having a plan to act on early warnings' are currently available in 36 countries (representing 41% of reporting countries). 38% of reporting countries indicated that they do not collect data on percentage of local governments having a plan to act on early warnings, and 21% did not respond.

54 countries (62% of reporting countries) reported that they collect data on local government plans to act on early warnings. These plans take into account the potential interrelated effects of multiple hazards in 38 countries (44% of reporting countries).

Resources needed to collect data: Financial resources – 100% of reporting countries; Capacity – 87%; and Technology transfer – 87%. Note that only 17% of reporting countries responded to this question.

Indicator G5: 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.

Data availability Indicator G-5 (risk information and assessment accessible, understandable and usable by the people)

Current data availability: Data for the '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' are currently available in 63 countries (representing 72% of reporting countries). 7% of reporting countries indicated that they do not collect data on 'accessible, understandable, usable and relevant disaster risk information and assessment' and 21% did not respond.

40 of the 63 countries (46% of reporting countries) report that risk information and assessment are accessible, understandable, and available in the public domain. 36 countries (41% of reporting countries) report that risk information and assessments are available to all people at national and local levels.

Resources needed to collect data: Financial resources – 100% of reporting countries; Capacity – 100%; and Technology transfer – 83%. Note that only 7% of reporting countries responded to this question.
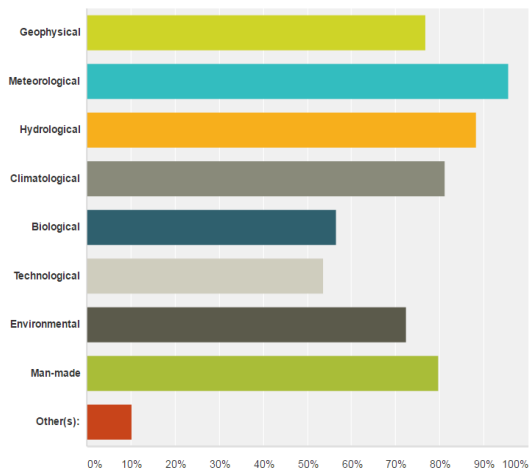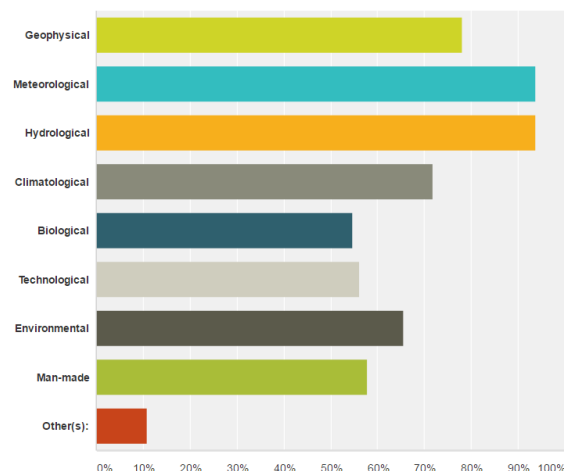
There is a strong correlation between the major hazards included in risk assessment and information and affectation, although less so for man-made hazards.

Indicator G6: Percentage of population exposed to or at risk from disasters protected through pre-emptive evacuation following early warning

Data availability Indicator G-6 (data on percentage of population exposed or at risk from disasters protected through pre-emptive evacuation following early warning)

Current data availability: Data required to calculate the 'percentage of population exposed to or at risk from disasters protected through pre-emptive evacuation following early warning' are currently available in 23 countries (representing 26% of reporting countries). 53% of reporting countries indicated that they do not collect data on 'percentage of population exposed to or at risk from disasters protected' and 21% did not respond.

50 countries (representing 57% of reporting countries) report having data on the number of people evacuated attributed to disasters.

Resources needed to collect data: Financial resources – 96% of reporting countries; Capacity – 74%; and Technology transfer – 70%. Note that 53% of reporting countries responded to this question.

Summary target G

The *Review* demonstrates the wide variations in the availability of the data required to report against the recommended indicators of the target. Of those countries that reported to the *Review,* the percentages that collect data are as follows:

- ▫ 62% on *number of countries that have multi-hazard early warning systems*
- ▫ 62% on *the number of people per 100,000 that are covered by early warning information through local governments or through national dissemination mechanisms*
    - o 31 of 54 countries with early warning systems (36% of reporting countries), take into account the potential interrelated effects of multiple hazards
- ▫ 41% on the *percentage of local governments having a plan to act on early warnings*
- ▫ 62% on *local government plans to act on early warnings*

- ▫ 72% on *accessible, understandable, usable and relevant disaster risk information and assessment available to the people at the national and local levels*

    - o 46% of reporting countries report that risk information and assessment is accessible, understandable and in a form that can be used
    - o 41% of reporting countries report that risk information and assessment is available to all people at national and local levels

- ▫ 23% on the *percentage of population exposed to or at risk from disasters protected through pre-emptive evacuation following early warning*
    - o 57% on *number of people evacuated attributed to disasters*.

Approximately 23% of countries reporting to the *Review* are able to develop baselines for measuring the recommended indicators of Target G.

Chapter 2.   Data quality

In calling for the Sendai Framework Data Readiness Review (the *Review*), Member States sought to improve the understanding of the state of national disaster-related **data availability**, to identify the data gaps, as well as the resources required to be able to monitor and report on the indicators measuring the Sendai Framework global targets. However, feedback to the *Review* has additionally identified that data availability cannot be dissociated from aspects of **data quality and accessibility**.

The implementation, monitoring and reporting of the Sendai Framework and the 2030 Agenda for Sustainable Development is predicated on the generation and provision of, and access to, high quality disaster-related data that will allow effective collation, comparison and analysis by Member States and other stakeholders, both within a country context, as well as between countries and regions. This will be made much more difficult without the application of commonly agreed methodologies and quality standards.

The endorsement of the global indicator framework for the SDGs[6] by the United Nations Statistical Commission (UNSC)[7] means that the data required to measure key indicators for five of the seven global targets of the Sendai Framework will also be used to measure disaster-related targets of SDGs 1, 11 and 13. Member States determined that the global indicator framework developed for the 2030 Agenda for Sustainable Development, should be supported by robust data, underpinned, where relevant, by the Fundamental Principles of Official Statistics. Furthermore, to support implementation at all levels, the 2030 Agenda also included the need to exploit the contribution to be made by a wide range of data, including Earth observations and geospatial information.

Recognising the need for quality and consistent methodological approaches, in support of the operationlisation of the global indicators to measure achievement of the global targets of the Sendai Framework and the SDGs, the OIEWG called upon the UNISDR to undertake work with relevant technical partners[8], inter alia to develop minimum standards, methodologies and metadata for disaster-related data, statistics and analysis.

While the majority of existing disaster-related data are sourced from national disaster management institutions, sectoral line ministries, as well as the emergency services, the integration of the Sendai Framework indicators within the global indicator framework of the SDGs, will prompt increasing collaboration with national mapping and geo-information institutions, and the NSOs, in the follow-up to the Sendai Framework.

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[6] developed by Member States, regional and international organisations in the Inter-agency and Expert Group on SDGs Indicators (IAEG-SDGs)

[7] http://unstats.un.org/unsd/statcom/48th-session/ The UNSC is the highest decision making body for international statistical activities - setting statistical standards, developing concepts and methods and implementing at the national and international levels.

[8] including national government focal points, national disaster risk reduction offices, national statistical offices, the Department of Economic and Social Affairs and other relevant partners

2.1. Disaster loss accounting, geospatial data, big data and statistics

As the OIEWG concluded its programme of work, collaboration with the international statistical community intensified so as to promote the alignment of frameworks, standards and classifications for disaster-related statistics. This built on the work to date led by the NSOs and Disaster Management Agencies (DMAs) of the Europe and Asia-Pacific regions, and respectively supported by the statistical divisions of the United Nations Economic Commission for Europe (UNECE) and the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP).

As the gatekeepers of social, economic and environmental statistics, NSOs are well positioned to respond to important data needs arising from the Sendai Framework, the 2030 Sustainable Development Agenda, the Paris Agreement and other global initiatives. The Conference of European Statisticians (CES) for instance, has supported countries in developing national road maps[9] for developing climate-change related statistics, inter alia to assist prioritization of countries in line with international climate reporting requirements, to understand data gaps and needs, and evaluate available resources.

Member States nevertheless recognized that the NSOs alone would not be able to capture the entirety of data required to track progress towards the Goals and Targets of the SDGs, and that a global indicator framework should capture the multifaceted and ambitious aspirations for the continued development of nations and societies[10].

They recognized the critical importance of "transparent and accountable scaling-up of appropriate public private cooperation to exploit the contribution to be made by a wide range of data, including Earth observation and geospatial information, while ensuring national ownership in supporting and tracking progress", capitalizing on modern data processing techniques able to manage large volumes of data.

Effective reporting of progress toward the global targets of the SDGs and the Sendai Framework using the agreed indicators requires the use of multiple types of data, including: disaster loss accounting and statistical data sources[11], as well as the use of new sources of data – notably Earth observations (EO) and geospatial information (GI).

The data quality elements to be considered for location or geospatial data include: *positional accuracy, logical consistency* and *completeness*.

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[9] Example Road Maps for Developing Climate Change-Related Statistics. UNECE Expert Forum for Producers and Users of Climate Change-Related Statistics. March 2017

[10] Earth Observations in support of the 2030 Agenda for Sustainable Development, March 2017, GEO under the EO4SDG Initiative

[11] such as traditional national accounts, household surveys and routine administrative data

2.2. Disaster-related earth observation data

Earth observation (EO) data and information – which include satellite, airborne, land and marine-based data, as well as modeled outputs – can track changes in high resolution and in real time, and are fundamental to defining the environmental dimension of the SDGs and the Sendai Framework. Providing a historical record of changes to the Earth – such as land use change, flood, drought and other aspects of disaster – earth observations can be combined with demographic, statistical, and other data, to support data-driven decision-making and action across government institutions and programmes.

EO has the potential to expand monitoring capabilities across sectors and provide more dynamic disaggregated data to support nations and other stakeholders in informed decision-making, planning, and in making the necessary adjustments and course corrections to enhance the sustainability of collective efforts to implement the 2030 Agenda[12] and the Sendai Framework.

A number of NSOs are exploring the integration of open EO data and statistical data in existing decision-making architecture. The complementarity of EO with traditional statistical methods means that EO can offer validation options of in-situ data measurements (such as survey and inventory data), can communicate and visualize the geographic dimensions and context of the SDGs and Sendai Framework indicators, and where appropriate, provide disaggregation of the indicators[13].

The integration of EO and GI, using techniques capable of processing large volumes of data, can help shape how sustainable development is tracked, and how well-being is monitored[14]. Since EO and GI are often continuous in their spatial and temporal resolutions, their use in monitoring the SDGs and the Sendai Framework can provide insights in the trends in the reduction of disaster risk and efforts to implement the 2030 Agenda.

EO and GI will amplify monitoring capabilities at local, national, regional and global levels, and across sectors, and can significantly reduce the cost burden to countries of monitoring the SDGs and the Sendai Framework. Satellite data, for instance, is available at all scales (from local to global), can be derived in relatively short timeframes, and offer consistency and comparability underpinned by lengthy time series, allowing governments to track progress and establish baselines[15]. An increasingly diverse array of EO data are available, with dozens of geophysical parameters that could be brought to bear in monitoring implementation of the 2015 frameworks.

Free and open access data is on the increase – take US mission data or the data policy of Europe's Copernicus programme, for instance – the prospects for access to the EO data required by developing countries have improved considerably.   High performance computing and cloud storage and processing capabilities are making it simpler to handle and apply such large and complex datasets.

Earth observation-derived monitoring and methodologies are being explored by the IAEG - Working Group on Geospatial Information (WGGI) and the UN custodian agencies. These methodologies will

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[12] http://www.data4sdgs.org/earth-observation-data-to-support-the-sdgs
[13] Earth Observations in support of the 2030 Agenda for Sustainable Development, March 2017, GEO under the EO4SDG Initiative
[14] http://www.earthobservations.org/documents/publications/201703_geo_eo_for_2030_agenda.pdf
[15] Idem. GEO under the EO4SDG Initiative. March 2017

be integrated into statistical practice standards and manuals and supported by free and open data sources from global data stores.

In 2016 the National Statistics Office of Colombia (DANE) undertook a pilot project to explore the use of satellite images to improve and eventually produce official statistics for the Sustainable Development Goals (SDGs) etc..

Undertaken in collaboration with the Global Partnership for Sustainable Development Data (GPSDD), DANE used the Google Earth Engine to optimize processing and classification of images to help calculate the SDG Indicator 11.3.1, Ratio of land consumption rate to population growth rate. This was part of GPSDD's Data Roadmaps for Sustainable Development process.

In 2017, the National Aeronautics and Space Administration, the Group on Earth Observations (GEO), DANE and GPSDD further identified data gaps where EO could contribute or where EO-based methods could be piloted to address key data challenges. This was undertaken for SDGs 6, Clean Water and Sanitation, 11, Sustainable Cities and Communities, and 15, Life on Land.

DANE found that in terms of geospatial data, images with similar spatial and spectral resolutions are required for multi-temporal studies. Improvements are required, including for free data sourced from the Landsat platform, to overcome issues such as cloud shadow and data gaps.

DANE also concluded that population data integrity issues could potentially be addressed by using data from administrative registers, although such registers require transformation by NSOs before being integrated into official statistics. The transformation process would include geo-referencing registers, and conclusion on use, processing, custody, confidentiality and dissemination policies, among others.

Alternative sources and procedures can assist in comparing results and guiding decision-making, however, validation of Big Data for example, is mandatory if these are to be used for the generation of official statistics. Several methods have been piloted to validate the data, e.g. the 'Shape-Theme-Edge-Position' (STEP), 'confusion matrixes' inter alia.

Source: *National Statistical Office of Colombia (Departamento Administrativo Nacional de Estadística (DANE)*

With the integration of a number of the key indicators of the Sendai Framework within the global indicator framework of the SDGs, the degree to which Earth observation-derived monitoring and methodologies can also be developed for Sendai Framework indicators should be explored.

Specific applications of earth observation data for disaster risk reduction.

The **Group on Earth Observations (GEO)**[16] has a number of disaster-related activities underway through the GEO Work Programme:

▫ **Data Access for Risk Management (GEO-DARMA)**[17] fosters the use of EO data and EO-based risk information by end users and includes an EO-related capacity-building component. It aims to support operational risk reduction activities focusing on end user priorities in line with the Sendai Framework, together with end-to-end projects that rely on the use of multiple sources of observation data. Methodologies have been defined and tested by the Committee on Earth Observation Satellites (CEOS) and its partners.

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[16] http://www.earthobservations.org/index.php
[17] http://www.earthobservations.org/activity.php?id=110

- ▫ **Geohazard Supersites and Natural Laboratories (GSNL)** international partnership[18] the aim of which is to improve geophysical scientific research and geohazard assessment in support of disaster risk reduction. It promotes a broad international scientific collaboration and open access to a variety of space- and ground-based data, focusing on areas with scientific knowledge gaps and high risk levels: the Supersites and the Natural Laboratories.

- ▫ **Global Earth Observations System of Systems (GEOSS)[19]** is a set of coordinated, independent Earth observation, information and processing systems that interact and provide access to diverse information for a broad range of users in both public and private sectors. GEOSS links these systems to strengthen the monitoring of the state of the Earth, and ensures that these data are accessible, of identified quality and provenance, and interoperable to support the development of tools and the delivery of information services. GEOSS increases our understanding of Earth processes and enhances predictive capabilities that underpin sound decision-making. GEOSS Data Sharing Principles (2016-2025) will include Open Data by default, making data available as part of the GEOSS Data Collection of Open Resources for Everyone (Data-CORE) without charge or restrictions on reuse, subject to the conditions of registration and attribution when the data are reused.

2.3. Official statistics and disaster-related data for the Sendai Framework and the SDGs

To support the development of multi-purpose datasets, of adequate quality able to support simultaneous monitoring and reporting against the SDGs, the Sendai Framework and potentially the Paris Agreement, it will be essential to integrate disaster loss information into official statistics is essential. Other data, such a geospatial data or big data can be used to increase data availability, for as long as they fulfil minimum criteria for application. In generating official statistics, the NSOs apply seven components of statistical quality: *Relevance, Accuracy, Timeliness, Punctuality, Accessibility, Clarity,* and *Comparability*.

Data quality is therefore a key aspect that countries will need to address with relevant stakeholders in strengthening monitoring and reporting capabilities. Guidelines on data standards, methodologies for measuring the indicators and the processing of statistical data for the global targets of the Sendai Framework, are currently being developed. This is a coordinated undertaking of the UNISDR, Member States and relevant technical partners, including the international statistical community for the development of disaster-related statistics.

In the development of national disaster loss accounting systems, methodologies vary among countries. The majority of existing datasets worldwide use the *DesInventar* methodology, which is currently being applied in 98 national disaster loss databases[20]. *DesInventar* considers losses associated with disasters at all scales, and entails a minimum disaggregation of losses by *location, event* and *hazard type*. As identified in studies carried out by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) and United Nations Development Programme (UNDP)

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[18] http://www.earthobservations.org/activity.php?id=115
[19] https://www.earthobservations.org/geoss.php
[20] http://Desinventar.net/index_www.html

in five countries in the Asia and Pacific, the analysis of direct and indirect impacts from disasters is conducted on a specific case-by-case approach. In general, the Damage and Loss Assessment (DALA) methodology developed by ECLAC is not being consistently applied in all countries. Statistics on risks and vulnerability to disasters are dependent to a large extent on the availability of detailed information on population.

Substantive work developing disaster-related statistics to meet the reporting requirements of both the SDGs and the Sendai Framework is ongoing. The UN Economic Commission for Asia and the Pacific (UNESCAP) *Asia-Pacific Expert Group on Disaster-related Statistics* has begun the work of developing a core set of disaster-related statistics, of which a draft Disaster-Related Statistics Framework is a part.

Figure 1: DRSF Core Set and Enlarged Framework
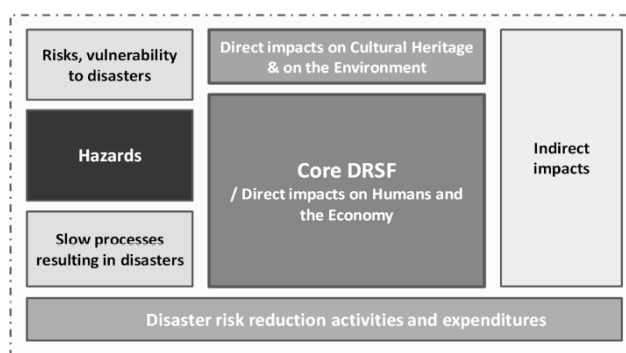
Source: *Draft Disaster-related Statistics Framework, UNESCAP*

This work was supported by a series of pilot studies in 2016, in which disaster impact databases were reviewed in four Asia-Pacific countries: Bangladesh, Fiji, Indonesia, and the Philippines. The synopsis and recommendations focus on the qualitative aspects of the data – comparability, robustness, and relevance – and assess availability of data in relation to the Sendai Framework indicators, including disaggregation.

In parallel, the Bureau of the Conference of European Statisticians (CES) established the *Task Force on measuring extreme events and disaster*[21] in February 2015. Its principal objective being to clarify the role of official statistics in providing data related to extreme events and disasters, and identify practical steps for NSOs, in coordination with national agencies responsible for disaster management, to support disaster management and risk reduction.

Recognizing that partnerships that are already in evidence in some countries and regions will need to be replicated at scale in a coherent manner, NSOs at the United Nations World Data Forum 2017 established a **global partnership for disaster-related statistics** to assist in delivering the outcomes called for by Member States in intergovernmental working groups.

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[21] Membership: NSOs of Armenia, Italy (chair), Kazakhstan, Mexico, Republic of Moldova, New Zealand, Nigeria, South Africa and Turkey. International organizations: FAO, the Joint Research Centre of the European Commission (JRC), Eurostat, UN-ECLAC, UN-ESCAP, UNISDR, WHO and the WMO.

Chapter 3.   Data accessibility

Many countries face numerous challenges in respect of data accessibility. As observed in a number of cases, including in UNISDR's work supporting the development of disaster loss databases, **data may be available but not free of charge**. For example, government entities may be charged a premium to receive (official) statistical data.

An example from a UNESCO-led initiative assessing data access, availability and quality for the development of a flood forecasting model for Namibia in 2014[22], revealed serious challenges regarding access to available meteorological and hydrological national data and information critical for effective flood and drought modeling.

> The UNESCO-led survey in Namibia requested categorical information about the types of data collected, data qualities (such as the average amount of missing data points and average length of record, the numerical area of data collection), and the ease of information sharing.
>
> The survey found that specific details were lacking – including those required to evaluate how to improve the data, and determine optimal flood forecasting methods for Namibia. Several government services expressed concern that data sharing may discredit their work. In addition, institutional proprietary issues impeded the granting of free access to data for flood modeling purposes.
>
> Data sharing between government institutions in some countries can be challenging even nonexistent. A minority of agencies have a set procedure for data access, and even if informal exchanges occur, publication or secondary use may be difficult without official authorisation. Similar impediments were found to exist when it came to international data sharing (between Namibia and Angola); which given the transboundary nature of flooding in the region presented a critical data gap.
>
> This case illustrates how limited data accessibility and data sharing – between government institutions within and between countries – weakens the data environment, with negative effects on monitoring and reporting, the application of data for disaster risk reduction.

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[22] Data Access, Availability and Quality Assessment for the Development of a Flood Forecasting Model for Namibia, Final Report, April 2014, UNESCO

A Green Paper produced by the government of the Philippines in the aftermath of Typhoon Yolanda[23] identified critical gaps in data availability, quality and accessibility, particularly with regard to administrative boundaries, key infrastructure locations and road networks, as well as inconsistencies of such data between different national institutions. Limitations that severely hampered the ability of the government to make informed decisions and take appropriate and timely action.

In a country with such high exposure to natural hazards, the conclusions of this study prompted the government of the Philippines to take concrete actions:

1. It developed a **strategic framework on geospatial information and services for disasters** under the umbrella of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM). This work, co-chaired by the National Mapping and Resource Information Authority (NAMRIA) aims at ensuring that accurate, timely, available, quality and accessible geospatial information and services, are provided in a coordinated way, to decision makers and operational leads prior to, during and post disasters.
Draft policies aiming at improving the data availability, quality and accessibility are already available, while the development of supporting material for implementation at the technical level is ongoing[‡].

2. Establishment of the Information Management Technical Working group (IM-TWG) by the Office of Civil Defence. The TWG works to **ensure the availability and accessibility of quality geospatial, statistical and humanitarian information** across the entire emergency cycle[‡‡].

The work being undertaken by the Philippines is informing the revision of related guidance materials, including guidelines on Common Operational Datasets (CODs) in Disaster Response of the Inter-Agency Standing Committee (IASC) – currently being revised by UNOCHA.

[‡]   http://ggim.un.org/UN_GGIM_wg5.html
[‡‡] http://digitaleducation.net/im-twg/

Some countries have been proactive in establishing data-sharing protocols and portals to improve data accessibility. Experience in these contexts has shown that to ensure that data management and sharing at national level attains the levels of openness and quality that is required for effective decision-making, delivery, monitoring and reporting, this must often be preceded by extensive and exhaustive advocacy.

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[23] Increasing Availability, Quality, and Accessibility of Common and Fundamental Operational Datasets to Support Disaster Risk Reduction and Emergency Management in the Philippines | Green Paper 1 (v1.2: 29th May 2014) http://www.gaia-geosystems.org/PROJECTS/SIIEM/PHL/Green_Paper_DSWD-SIIEM_305014.pdf

Chapter 4.   Application of data

The Cape Town Global Action Plan for Sustainable Development Data[24] underlined the importance of quality and timely data as vital for enabling governments, international organisations, civil society, private sector and the general public to make informed decisions and to ensure the accountability of representative bodies. Effective planning, follow-up and review of the implementation of the 2030 Agenda for Sustainable Development and the Sendai Framework requires the collection, processing, analysis and dissemination of an unprecedented amount of data and statistics at local, national, regional and global levels and by multiple stakeholders.

However, if the goals of the Sendai Framework and the 2030 Agenda for Sustainable Development are to be achieved, it is not sufficient simply to improve the provision of quality and timely data, these data must be accompanied by the political and operational commitment to leverage data to systematically inform policy, planning and investment decisions. As the *Global Partnership for Sustainable Development Data* states, it is crucial that data and evidence-based policy-making makes it onto the political agenda[25].

However the challenge is great. The report *A World that Counts | Mobilising the Data Revolution for Sustainable Development*[26] identifies huge and growing inequalities in access to data and information and in the ability to use it. Data does need improving, but too often, existing data remain unused because they are released too late or not at all, not well documented and harmonized, or not made available to the appropriate institutions / individuals, or at the level of detail needed for decision-making. This is no small undertaking, as the authors of the report – the IEAG - identified, significant investment will be needed to break down the barriers between people and data, through inter alia education programmes aimed at improving the capacity and data literacy of people, infomediaries and public servants.

Data needs to be generated with users in mind. Too often data providers underinvest in identifying and engaging those in a position to use data to drive action. Data that cannot be translated into action because of lack of operational tools to leverage them, entails a loss to society in terms of the benefits that could have been gained. Agencies with a mandate to collect public information are not always well-suited to ensuring their information is used by stakeholders.

These are aspects that have been included in feedback to the *Review*. Two key constituencies identified by countries and stakeholders wherein improved collaboration is considered feasible and could bring immediate gains, is in the **collaboration between national statistical offices (NSOs)** and **national disaster risk management institutions.**

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[24] prepared by the High-level Group for Partnership, Coordination and Capacity-Building for statistics for the 2030 Agenda for Sustainable Development (HLG-PCCB) https://undataforum.org/WorldDataForum/launch-of-the-cape-town-global-action-plan-for-sustainable-development-data/

[25] http://www.data4sdgs.org/data-in-action/#sthash.xiJ320OD.dpuf

[26] prepared at the request of the United Nations Secretary-General, by the Independent Expert Advisory Group on a Data Revolution for Sustainable Development (IEAG). November 2014

4.1. National statistical offices and national disaster risk management institutions

The improvement of disaster-related data literacy, and its application in decision-making by all relevant government institutions, has been particularly challenging. Notwithstanding data generation and provision aspects discussed above, the transmission of quality, relevant information to appropriate users in a timely manner, and in a form that facilitates consideration in decision-making, requires dedicated attention.

The challenges in information exchange and coordination between NSOs and NDMAs are a case in point. Studies conducted by UNESCAP and the UNDP on current practices in coordination between the NSOs and national disaster management agencies (NDMAs) in five countries in the Asia and Pacific[27] identified a number of factors that will need to be addressed if collaboration is to be improved. These include: traditional institutional structures and mandates; common baselines; capacities to mutually support and complement respective data and information sets; or information sharing protocols etc.

The integration of metrics for the global targets of the Sendai Framework within the global indicator framework for the SDGs provides the opportunity for many of the aspects to be addressed as part of countries' broader follow-up to the 2015 agreements; and an appetite for joint analysis and development of applied information is observed in many countries. In 2015 and 2016, UNISDR together with UNDP undertook nine pilot exercises testing the suite of optional national indicators proposed for measuring nationally determined targets in disaster risk reduction. In many countries, the NSOs were prominent, providing profound contributions to developing a common understanding of the needs and gaps, as well as of capacity (technical and HR) and information sharing constraints.

Assessing the impacts of disasters depends on a variety of baseline information that come from various data sources, including official statistics. NSOs have sophisticated mechanisms for the collection of complex datasets relevant to the analysis of disaster impact, inter alia on population and economic activity. Population Census data can be available at detailed geographic levels which makes it an important resource, but may suffer issues of affectation and frequency of update. Issues that national disaster management institutions may be in a position to redress, given that they often manage or collate databases on disaster events, affected households and individuals, and extent of damage and destruction to property.

As was identified in the outcome and goal of the Sendai Framework, the realization of its aspirations is contingent upon government leadership and political commitment, including to improving the evidence base for effective policy, planning and decision-making to effectively manage disaster risk. Hence the work that has been initiated by the international statistical community – including the *Task Force* of the Conference of European Statisticians, the *Asia Pacific Expert Group*, and the *global partnership* called for by NSOs at the World Data Forum (see above) – has the possibility to transform the relationship between the NDMAs and other government institutions, in that it provides the basis for the application of the Fundamental Principles of Official Statistics in developing data and information sets supporting the implementation of the Sendai Framework and the SDGs.

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[27] Indonesia, Kiribati, Mongolia, the Republic of Korea and Sri Lanka

This will not happen without significant investment in the enhancement of capabilities for monitoring, evaluation and analysis within government institutions with responsibility for understanding and managing disaster risk. So the inclusion of key global indicators from the Sendai Framework within the global indicator framework for the 2030 Agenda for Sustainable Development, presents real opportunities to enhance the application of disaster-related data in risk informed decision.

The Cape Town Global Action Plan for Sustainable Development Data for instance, in Strategic Area 4 seeks to: Develop and promote innovative strategies to ensure proper dissemination and use of data for sustainable development. The Plan identifies a series of key actions that are of pertinence for countries and stakeholders, including:

- Promote the development of technological infrastructure for better data dissemination.

- Develop effective communication and data dissemination strategies and guidelines for public and private dialogue oriented to policy-makers, legislators, the media, the general public, the economy, etc.

- Leverage the use of e-learning platforms to share knowledge between producers and users.

- Develop and implement educational programmes to increase data literacy and data misuse recognition and empower institutions and individuals to use statistics effectively in their own decisions.

Chapter 5. Conclusions

The indicators recommended by the OIEWG were endorsed by the UN General Assembly at the beginning of February 2017, which allowed little time for detailed analysis and feedback before the 2017 Global Platform for Disaster Risk Reduction. Despite the constrained timetable, 87 nations from all regions participated in the *Review* – an excellent response, providing a valuable reflection on the state of overall readiness of Member States to report.

The findings of the *Review* provide an indication of the considerable work that will need to be undertaken for countries to be able to monitor the agreed indicators in the manner anticipated by the two intergovernmental working groups – the OIEWG and the IAEG-SDGs.

Data availability:

The figure[28] below summarises countries' assessment of the **availability of data** to monitor and report on the indicators measuring the global targets of the Sendai Framework (and disaster-related targets of the SDGs).
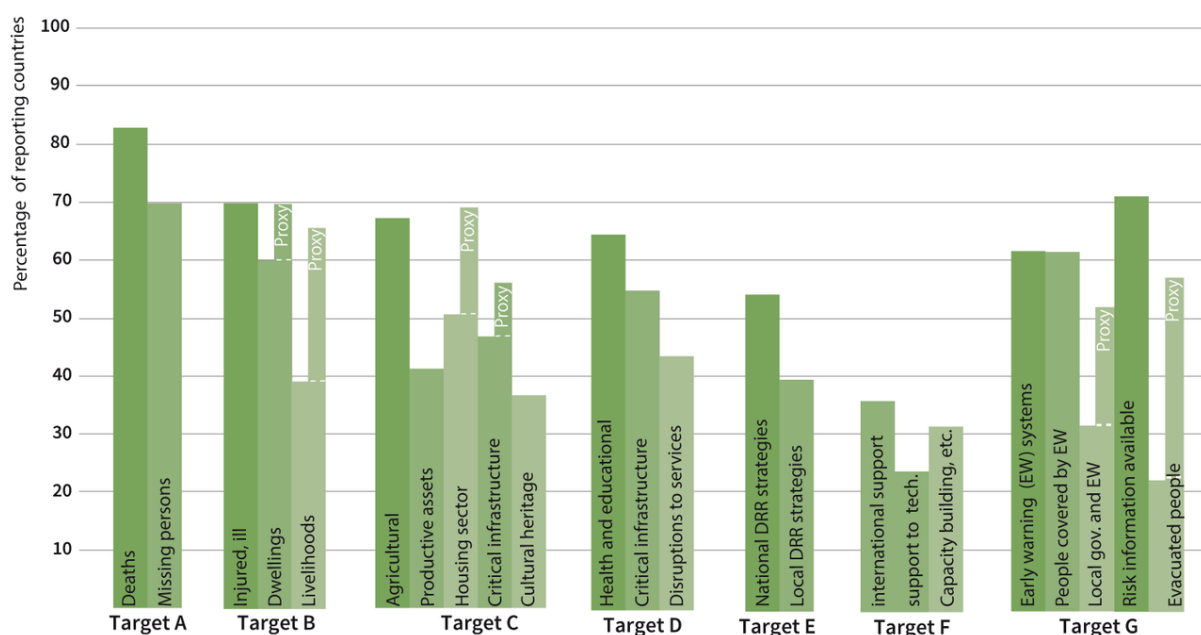
- In general, most countries collect a critical mass of disaster loss data – Targets A to D – with Targets A and B most well served; 83% of countries identify data available to report on the number of deaths attributed to disasters, and 66% are able to report on number directly affected.

- The practice of disaster loss accounting is well established in many countries; however, datasets are typically more available on physical damage and human impact, and less available on economic losses, livelihoods, losses of specific assets and infrastructure, cultural heritage and disruptions to basic services.

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[28] *Proxy* indicates where questions were added to the *Review* when data were assumed to be inconsistent or scarce, so as to allow an assessment of data availability and sources that could serve as a proxy for the indicator.

- 40-60% of countries are currently able to develop a baseline for most indicators for the disaster loss-related global Targets A-D; although many fewer (29-33%) can develop a baseline for critical infrastructure, disruptions to basic services, losses to productive assets and the housing sector.

- Sendai Framework Targets E-G concern policy and other input indicators, and countries report wide variation in data availability.

- This ranges from 57-72% for data pertaining to early warning systems, risk information and people evacuated within Target G, to 39-54% of countries for data on national and local DRR strategies under Target E.

- Lowest data availability - with a little over 20% of countries – was reported for the indicators for Target F.

   Resource requirements:

Country responses to the resource requirements to redress the data gaps identified were organized using the three main categories used to measure international cooperation: a) financial resources, b) technology transfer, and c) capacity building.

- > 90% of countries indicated the need for financial resources first and foremost to cover the data gaps observed for most indicators. This was followed by capacity and then technology transfer resources.

- *International cooperation* – financial resources are identified as the critical resource required to redress the data gap; technology transfer is considered more important than capacity building.

- *Early warning systems* – all reporting countries cite capacity building and technology transfer as the critical resources required to meet the gaps in data; 94% of reporting countries cite financial resources.

- *Risk information* – financial resources and capacity are indicated as being equally important; followed by technology transfer.

The determinants of data availability are numerous, and include collection practices, organizational culture, data sharing mechanisms or the lack thereof, cost (for example, of establishing collection systems, housing data and purchasing data), private sector proprietary concerns and data governance.

Data availability gaps should be addressed by March 2019, if countries are to be able to report against the Sendai Framework global Targets as planned.

Data quality, accessibility and application:

- Data quality varies between reporting countries, and although almost 60% of all Member States employ a standardized and comparable methodology to produce loss data (using *DesInventar*), many reporting countries use different measurement and data hosting systems, and aggregate data differently.

- This will impact the ability to evaluate and report on the data. Internationally agreed upon methodologies and minimum standards, including for basic disaster statistics, would support data standardization and quality.

▫ The task at hand will not be limited to improving data availability, but should also seek to remove institutional barriers, and create common data sharing platforms and protocols to enhance data accessibility and applicability for, and by, all relevant government ministries, departments and bodies.

▫ The integration of disaster-related data within national statistical systems can bring quality dividends through applying the principles of official statistics.

▫ Additional value may be gained by employing other data and information, for example in utilising geospatial and 'big data'.   These will require a separate concerted effort and possible economic cost.

▫ Improved disaster-related data and statistics and associated information products, enhances relevance and usability, which in turn can support amplified evidence-based disaster risk management. Improving data collection and standardizing data would allow for a more pertinent assessment of the efficacy and impact of policy, investment and practice, and identify aspects for improvement.

In conclusion, the *Review* identifies that critical data gaps exist in specific areas of disaster loss, in all areas of international cooperation, and for many aspects of early warning, risk information and disaster risk reduction strategies. The *Review* confirms that unless gaps in data availability, quality and accessibility are addressed, countries' ability to assure accurate, timely and high quality monitoring and reporting of implementation across all Targets and Priorities of the Sendai Framework will be severely impaired.

Such action will need to be undertaken in a coordinated manner to allow the development of consistent and comparable data at the national, sub-national, as well as the global levels. The need for collective effort in enhancing aspects of data availability, accessibility and quality, has been recognized by a number of key communities – including the national statistical offices, and national mapping and geo-information agencies.

A **Global Partnership for Disaster-related Data for Sustainable Development** would facilitate a collaborative, multi-stakeholder effort (bringing together governments, international organizations, the private sector, civil society groups, and the statistics and data communities), to optimize and operationalize existing and future disaster-related data in support of national and sub-national disaster risk reduction efforts, and in so doing, enhance:

i.   data availability, including developing new datasets

ii.   data quality, including the integration of disaster-related data in official statistics

iii.   data accessibility, including addressing geospatial aspects of data, and

iv.   the application / use of data, including the development of common data sharing platforms, protocols and minimum standards.

ANNEX 1 – Reporting Countries

The following countries completed the Sendai Framework Data Readiness Review 2017 during the period 20 February 2017 to 20 April 2017:

Afghanistan, Albania, Anguilla, Antigua and Barbuda, Australia, Austria, Bahrain, Bangladesh, Belarus, Bhutan, Bolivia, Brazil, Burundi, Cambodia, Canada, Central African Republic, China, Colombia, Costa Rica, Croatia, Ecuador, Egypt, Estonia, Ethiopia, Federated States of Micronesia, France, Georgia, Germany, Guatemala, Guyana, Honduras, Hungary, Jamaica, Japan, Jordan, Kuwait, Lao, Lebanon, Liberia, Lithuania, Malaysia, Maldives, Mauritius, Mongolia, Montenegro, New Zealand, Nigeria, Norway, Palestine, Poland, Portugal, Qatar, Republic of Korea, Romania, Saint Kitts and Nevis, Saint Vincent and Grenadines, Slovenia, Sri Lanka, Swaziland, Sweden, Switzerland, Tanzania, Thailand, the Netherlands, Tonga, Trinidad and Tobago, United Kingdom of Great Britain and Northern Ireland, Ukraine, Zimbabwe.

The following countries partially completed the Sendai Framework Data Readiness Review 2017 during the period 20 February 2017 to 20 April 2017:

Argentina, Barbados, Cook Islands, Democratic People's Republic of Korea, Indonesia, Iraq, Ireland, Latvia, Mauritania, Mexico, Myanmar, Nauru, Pakistan, Philippines, Saudi Arabia, Sudan, Turkey, Tuvalu.

Total number of reporting countries to the Sendai Framework Data Readiness Review 2017 – 87.

In support of the Sendai Framework
for Disaster Risk Reduction 2015 - 2030

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United Nations Office for Disaster Risk Reduction