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Report of the Chair of the Open-ended Intergovernmental Expert Working Group on Indicators and Terminology relating to Disaster Risk Reduction

on

Results of informal consultations from February to November 2016 on indicators and terminology relating to Disaster Risk Reduction

I. Introduction

1. The present report provides an account of the key deliberations and recommendations emanating from the informal consultations of the Chair of the Open-ended Intergovernmental Expert Working Group (OIEWG) on Indicators and Terminology relating to Disaster Risk Reduction (DRR) in Geneva with delegates and experts (remotely via WebEx) between the Second and Third Session on 20-21 June, 10-11 October and 9 November 2016.

2. The informal consultations derive their mandate from the Second Session of the Working Group held in Geneva from 10-11 February 2016. In concluding the session, to advance the work in the inter-sessional period, it was agreed that the Chair of the Working Group, H.E. Ambassador Wayne McCook, Permanent Representative of Jamaica to the United Nations in Geneva, would convene informal consultations with delegates.

3. The purpose of the informal consultations of the Chair was to seek further clarity on central issues and to try to build consensus around possible landing zones on core and critical indicators and relevant DRR terminology. It was agreed that no decisions or amendments to the working texts on indicators and terminology developed at the Second Session would be taken during the informal consultations. However, progress made was recorded and reported in the present report, with a view to advancing relevant decisions.

4. Delegates and experts from the following 77 states plus the European Commission took part in the informal consultations either in person or via WebEx: Algeria, Argentina, Australia, Azerbaijan, Bahamas, Bangladesh, Belarus, Belgium, Bhutan, Bolivia, Botswana, Brazil, Canada, Chile, Colombia, Costa Rica, Croatia, Cuba, Czech Republic, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Finland, France, FYR Macedonia, Georgia, Germany, Guatemala, Holy See, India, Indonesia, Iran, Italy, Jamaica, Japan, Jordan, Kenya, Kuwait, Lao PDR, Madagascar, Malaysia, Mauritius, Mexico, Mongolia, Morocco, Mozambique, Myanmar, Nepal, Netherlands, New Zealand, Nicaragua, Norway, Pakistan, Palestine, Paraguay, Peru, Philippines, Poland, Republic of Korea, Russia, Serbia, Singapore, Slovakia, Sri Lanka, Switzerland, Tanzania, Thailand, Togo, Trinidad and Tobago, Turkey, UAE, USA, Uruguay, Venezuela and Zambia.

5. Representatives from nine UN system entities (FAO, ILO, UNESCO, UNICEF, UNISDR, UN-OCHA, WFP, WHO, WMO) and two other inter-governmental organizations (GCC, OECD) also took part. Additionally, written comments were received from Australia, Bangladesh, Czech Republic, Japan, Philippines, Iran, FAO, UNECE Task Force on Measuring Extreme Events and Disasters, Joint UNEP/ OCHA Environmental Unit on behalf of the Inter-Agency Coordination Group on Industrial and Chemical Accidents and the Advanced Planning and Organization World Institute (IMOPA) and Tohoku University.

6. At the outset of each of the three sessions, explanatory technical remarks were provided by the Secretariat on the technical non-papers prepared, followed by interactive discussions with the delegates.

II. Informal consultations on DRR Terminology

7. During the First Session of the OIEWG in September 2015 and the inter-sessional period preceding the Second Session in February 2016, the Working Group experts recommended alternative definitions to existing DRR terminology and also proposed a number of new terms to be defined. During the Second Session, while terms related to the proposed indicators for the Sendai Framework were discussed, a dedicated discussion on all proposed DRR terminology did not take place due to

time constraints. Subsequently, while the *Working Text on Terminology*[1] issued after the Second Session contains all proposals on DRR terminology made during the First and Second Session, it does not include proposals received outside the formal sessions.

8. In this context, at the request of the experts to further progress, UNISDR prepared, in consultations with its Scientific and Technical Advisory Group (STAG), a *technical non-paper on DRR terminology*[2] issued on 10 June 2016. The study took the Working Text on Terminology as a starting point and focused on terms and definitions where either differing views were presented by Member States, substantive changes were proposed or where additional clarification, explanation and technical support were expressed. It also considered new terms proposed by Member States. In addition, general comments made by Member States during the Formal Sessions of the OEIWG as well as inter-sessional comments received were considered.

9. The non-paper grouped the terms into three categories: contested terms; terms that countries may wish to consider not retaining in the working text, including working definitions related to indicators, and terms not specific to DRR; and non-contested terms for which minor amendments were suggested by countries. For new and contested terms, the non-paper looked at options to advance the identification of terms and related definitions, supported by technical and evidence-based justification.

10. During the first informal consultations in June, the participants deliberated upon the contested terms and expressed opinions not only on individual terms but also on how the terms collectively may be further streamlined and refined to avoid duplication and redundancy and ensure best fit. In the course of the review of the contested terms, suggestions for improvement were formulated with the intent to give due recognition to terms of art in the field of DRR. Specific comments were received on individual terms were detailed in the *report of the first informal consultations of the Chair*.[3]

11. Building on the June non-paper, an *updated technical non-paper on DRR terminology*[4] was issued by UNISDR on 30 September. The update considered comments received during the June informal consultations and the period after until September. It responded to countries' requests to review several definitions and propose appropriate wording for a number of contested terms and rationalize the list of proposed terminology.

12. The update proposed terminology for retention by the Working Group, selected on the basis of meeting one or more of the following four criteria:
a) specific and directly relevant to the DRR domain and thus considered to be "terms of art";
b) important concepts and terms in the context of the Sendai Framework for DRR;
c) not considered "terms of art" in other domains nor defined by other intergovernmental processes;
d) relevant to DRR but frequently used in other domains and therefore requiring clarity on its specific meaning in the context of DRR.

13. The updated non-paper also identified terms that would more accurately be categorized as working definitions for the indicators for the global targets of the Sendai Framework. It also proposed for deletion certain terms that were not necessarily specific to the DRR domain.

14. The updated non-paper was considered during the third informal consultations in November where participants expressed support for the approach taken in the non-paper and general agreement

[1] http://www.preventionweb.net/files/47136_workingtextonterminology.pdf
[2] http://www.preventionweb.net/documents/oiewg/Terminology%20related%20to%20disaster%20risk%20reduction%20-%20technical%20non-paper.pdf
[3] http://www.preventionweb.net/documents/oiewg/Report%20-%20Informal%20Consultations%20of%20the%20Chair%2020-21%20June%202016.pdf
[4] http://www.preventionweb.net/documents/oiewg/Terminology%20related%20to%20Disaster%20Risk%20Reduction%20-%20updated%20technical%20non-paper%2030%20September%202016.pdf

with the criteria applied to the terms in each of the two main sections. Participants suggested to take the terms listed in section I of the non-paper as a basis for further deliberation on Terminology, with the terms in section II, parts A and B, kept available for reference and retaining as required. The outcomes of these deliberations are reflected in the annex to the present report entitled *Results of the informal consultations of the Chair on Disaster Risk Reduction terminology* containing terms proposed for adoption by OIEWG in the Third Session.

III. Informal consultations on indicators for the seven global targets of the Sendai Framework

15. During the Second Session of the OIEWG, the experts undertook negotiations on the basis of the *Working Background Text on Indicators*[5] which included all proposals received during the First Session. In completing a reading of the proposed indicators for Target A through G, the experts identified a number of questions on indicator development for more in-depth work during the inter-sessional period, including through the preparation of concept notes and methodologies. A *Working Text on Indicators*[6] was issued after the Second Session containing all proposals from experts on indicators during the first and second formal session.

16. In follow-up to the Working Group's request, UNISDR issued three iterations of a technical non-paper on indicators in 10 June, 30 September and 4 November, containing concept notes on indicators for targets A, B, C, D E and G and UNISDR's recommendations on indicators for adoption by the Third Session. The first two iterations of the technical non-paper were deliberated upon by delegates and experts during the Chair's informal consultations on 20-21 June and 10-11 October and the concept notes were revised and the proposed indicators further refined based on the substantive discussions.

17. The discussions during the June and October consultations placed emphasis on the consolidation of indicators and on ensuring that they were fit for purpose, including as regards the development of national indicators. Particular attention was placed on the issue of data availability and on distinguishing between doable and desirable indicators. It was emphasized that the indicators for the global targets would serve to measure global progress. Delegates outlined treatment options for bracketed indicators and exchanged views on the feasibility of compound indicators and sub-indicators. The consultations highlighted issues common to several targets including: data requirements for constructing baselines; the absence of an internationally agreed standard for disaster loss data; the need to define the temporal dimension so as to establish when data should be recorded and reported; and the need to establish criteria for disaggregation of disaster loss and damage data.

18. In the technical non-papers, each concept note on indicators for targets A-E and G details possible computation methodologies, the technical requirements for the indicators, proposed working definitions for terms to be used for the indicators, and sources, data collection and statistical processing methods. Based on the request from the delegates for streamlining and simplification, summary concept notes were prepared, greatly reducing the length of the technical non-papers.

19. The recommendations for indicators contained in the results of the informal consultations employ a categorisation approach introduced in the June iteration of the technical non-paper and one that was incrementally refined based on the substantive recommendations during the informal consultations. The categorization approach is broadly analogous to that employed by Inter-agency and Expert Group on Sustainable Development Goal Indicators (IAEG-SDGs) in order to facilitate the achievement of

[5] http://www.preventionweb.net/documents/framework/Working%20Background%20Text%20on%20Inidcators%202%20October%20reissued%20on%2023%20October.pdf
[6] http://www.preventionweb.net/files/47136_workingtextonindicators.pdf

coherence in measurement systems. It analyses the proposed indicators contained in the *Working Text on Indicators* by the level of methodological development and overall data availability and groups them into the following three categories for consideration by the experts in the Third Session:

i) Compound Indicators: Indicators to measure the achievement of the Global Targets which can be constructed on the basis of a number of specific Global Indicators;
ii) Global indicators: Indicators ready to contribute to the global measurement of the target, for which a methodology exists, or has been proposed, and for which data is already available in a significant number of countries or can be generated through national self-assessment; and
iii) National Indicators: Indicators, for which a methodology exists or has been proposed, but for which data is not currently easily available in a significant number of countries. These indicators can be applied nationally in countries where the necessary data is available. When data becomes widely available in a larger number of countries, these indicators can potentially migrate to the Global Indicators category.

20. All indicators contained in the three categories are deemed by UNISDR as feasible for measuring progress towards the global targets of the Sendai Framework. Others proposed indicators contained in the *Working Text on Indicators* have not been proposed for retention as a methodology has not yet been developed nor is data easily available to measure them. It is expected that, as data availability and methodological development advances over the course of the Sendai Framework, it will be possible to migrate a number of national indicators to the Global Indicator category therefore enhancing the quality of the monitoring process. However, it is unlikely that these indicators could be used for global comparison, given the absence of data for the period 2005-2015.

21. On the proposed indicators on international cooperation for Target F, utilizing a model of focused consultations that were successfully used in the run up to the Sendai Conference, the Chair invited Egypt (succeeded by Ecuador) and Switzerland, as friends of the Chair, to facilitate 10+10 informal consultations comprising delegates from the Permanent Missions of developed and developing countries, to help advance work on elements for Target F indicators. A series of consultations were undertaken between June and 11 November.

22.All iterations of the technical non-papers were informed by, and in turn informed, the deliberations of the IAEG-SDGs and the UN Statistical Commission on the global monitoring framework for the 2030 Agenda for Sustainable Development. At its 47th Session, the Statistical Commission (E/2016/24- E/CN.3/2016/34) expressed its support for the report of the IAEG-SDGs and agreed with the final list of proposed SDG indicators which included five indicators relating to targets A to E of the Sendai Framework under consideration by the OIEWG. It was underscored that the IAEG-SDGs would utilize for SDG targets 1.5, 11.5, 11b and 13.1, the outcome of the OIEWG's work on indicators.

23. The informal consultations benefited from the findings of a feasibility exercise jointly conducted by Japan with 16 Member States on the proposed indicators for global targets A-D of the Sendai Framework (as contained in the *Working Text on Indicators*) using existing disaster damage statistics. The purpose of the exercise was to support the Working Group to develop feasible and relevant indicators for the Sendai Framework through feasibility tests of proposed indicators by volunteer Member States. The results[7] of the feasibility exercise validated the vast majority of the proposed global indicators that UNISDR has recommended to the OIEWG for consideration.

[7] http://www.preventionweb.net/documents/oiewg/Results%20of%20feasibility%20exercise%20conducted%20among%20Member%20States%20on%20proposed%20indicators%20for%20global%20targets%20A-D%20(paper).pdf

24. The results of the deliberations from February to November are reflected in the third iteration of the technical non-paper on indicators entitled *Results of the informal consultations of the Chair on indicators for global targets A, B, C, D, E, F and G of the Sendai Framework for Disaster Risk Reduction.*

IV. Issues for further consideration and follow-up

25. This section highlights a number of questions and needed actions that emerged during the informal consultations, which are critical and instrumental to enable the use of the indicators which will be adopted by the OIEWG and the monitoring and review of the Sendai Framework, including its synergy with the monitoring system of the SDGs. Such issues and actions include, countries' readiness to start using the indicators adopted by the OIEWG, the launching of the global monitoring tool and its connection with the SDGs monitoring system, and the further technical guidance which need to be prepared in support to countries.

Readiness review

26. By 2020 countries will have to have completed the baseline data on disaster loss and damage (2005-2015) required to monitor the achievement of SFDRR Global Targets A – D and be in a position to collect data on all the global indicators during the period 2020-2030.

27. As it emerges from a survey carried out by the Government of Japan with 17 other countries, major gaps in data exist in many countries. All member countries will require a functioning system to record and manage the disaster damage and loss data required to measure progress. Therefore, countries will have to make important investments in collecting disaster loss and damage data from both archival research into past disasters as well as through setting up information systems to capture ongoing events.

28. In order to assess the availability of data at the national level to feed the global indicators agreed to by the OEIWG, countries will need to conduct a *readiness review*, to be carried out in the first quarter of 2017 and the results will be presented by countries at the 5th session of the Global Platform for Disaster Risk Reduction to be held in Cancun, Mexico, in May 2017, as well as in a global report or overview.

29. The *readiness review* will highlight the status of data availability and quality, the level of confidence in data, the current level of data disaggregation, the capacities to generate data and reports, and identify timeframes and requirements to make the necessary improvements in data availability, quality and coverage.

30. In addition, during the same period and by 2020, countries will be expected to have achieved Target E of the SFDRR which calls for a substantial increase in national and local disaster risk reduction strategies. This will include the development of national Targets and Indicators, as highlighted in Paragraph 18 of the SFDRR. National Targets and Indicators, embedded in national strategies, will enable countries to monitor progress towards the achievement of the SFDRR Goal and in the four Priorities for Action.

31.The collection of disaggregated disaster loss and damage data is a requirement not only to report against the SFDRR but also the SDGs. It is noted that currently very few countries collect disaggregated data. Given that disaster loss and damage data for the period 2005-2015 was not disaggregated, it will not be possible to use disaggregated data to measure global progress against Targets A and B. The collection of disaggregated disaster loss and damage data will therefore be aspirational.

The Sendai Framework Monitoring system and cycles

32. Building on the experience of the web-based Hyogo Framework for Action Monitor, and taking into account the indicators adopted by the OIEWG, UNISDR will develop a new monitoring tool – the Sendai Framework Monitor – and present it as a "beta version" at the Global Platform in Cancun.

33. It is expected that reporting cycles will continue to be on a biennial basis, starting in 2017 with the first review and assessment of progress to take place in 2019. The first assessment will also coincide with the first period of comprehensive assessment of progress towards achieving the Sustainable Development Goals (SDGs), thus allowing for a comprehensive and integrated assessment.

34. While individual countries would be responsible for monitoring and reporting on the indicators at the national level, UNISDR would be responsible for the global compilation and analysis of the results with respect to global population, GDP, etc., and for generating a global level report. Regional Platforms and the Global Platform would provide the forum for review and validation of the results of the monitoring of the Global Targets of the SFDRR. This global review would also be a critical contribution to the review of the SDGs by the High Level Political Forum on Sustainable Development (HLFP) at the level of the General Assembly.

35.The global indicators to be agreed by the OEIWG will also be used to monitor the achievement of Target 1.5 (Goal 1), Target 11.5 and Target 11.b (Goal 11) and Target 13.1 (Goal 13) of the SDGs. Alignment of indicators across the international frameworks will allow for a systematic monitoring and harmonized review process of disaster risk reduction and sustainable development, strengthening the convergence and coherence between both international frameworks and reducing the reporting burden on countries.

36. At the same time, this requires that before the first biennial cycle of reporting begins in 2017, countries will need to strengthen or develop working arrangements between the organizations that normally report and collect disaster loss and damage data (typically the national organizations charged with disaster risk management) and national statistics offices that will play a key role in compiling national data across all sectors for the monitoring of the SDGs. Similarly, this implies that disaster loss and damage data will have to comply with the same statistical standards as social, economic, demographic and other data compiled by the national statistics offices, as well as principles for data disaggregation in line with the 'leave no one behind' principle of the SDGs.

Further expected technical work

37.The implementation of the future Sendai Framework Monitor will require the development by UNISDR of technical guidance, a "user's manual" to be available on-line, to support countries in using it and in the preparation of biennial reports. In particular, the global review of progress will require the development by UNISDR of a robust statistical methodology to normalise disaster loss and damage data to minimise the influence of extreme long-return period disasters on global trends.

38. Official statistics can serve as a multi-purpose information source for progress monitoring and results reporting against the Sendai Framework, the SDGs and the Paris Agreement. In this context, it would be necessary that the international statistical community, including DESA and the Expert Group of UNESCAP and UNECE, with the support of UNISDR, undertake further technical work in respect of existing statistical standards, including the development of guidelines and minimum standards for disaster-related data and statistics. This will ensure that target measurement of the Sendai Framework and the SDGs adhere to the same quality standards, and benefit from official statistics.

ANNEX I

Results of informal consultations on indicators for the global targets of the Sendai Framework for Disaster Risk Reduction 2015-2030

Color coding for Targets A, B, C, D, E and G.

Compound Indicator	Indicators to measure the achievement of the Global Target which can be constructed on the basis of a number of specific Global Indicators
Global indicators	Indicators ready to contribute to the global measurement of the target, for which a methodology exists, or has been proposed, and for which data is already available in a significant number of countries or can be easily generated through national self-assessment
National Indicators	Indicators, for which a methodology exists or has been proposed, but for which data is not currently easily available in a significant number of countries. These indicators can be applied nationally in countries where the necessary data is available. When data becomes widely available in a larger number of countries, these indicators can potentially migrate to the Global Indicators category.

Color coding for Target F.

Global indicators	Indicators ready to contribute to the global measurement of the target, for which a methodology exists, or has been proposed, and for which data is already available in a significant number of countries or can be easily generated through national self-assessment
Global indicators	Indicators, ready to contribute to the global measurement of the target, for which: a) a methodology exists or has been proposed to address a component of the indicator, and for which data are already available or can be developed, in a significant number of countries, *and* b) a comprehensive methodology and data are expected to be available within the timeframe for reporting against this target.
Global indicators	Indicators, not currently ready to contribute to the global measurement of the target, but for which a methodology and data can be expected to be developed in a significant number of countries, within the timeframe for reporting against this target.

	Target A
A-1	Number of deaths and missing persons due to hazardous events per 100,000 population.
A-2	Number of deaths due to hazardous events.
A-3	Number of missing persons due to hazardous events.

	Target B
B-1	Degree of direct affectedness by hazardous events per 100,000 population.
B-2 or B-2.	Number of injured or ill people due to hazardous events Number of people suffering from physical injuries, trauma or cases of disease requiring

alt	immediate medical assistance as a direct result of a hazardous events.
B-3a	Number of evacuated people following hazardous events
B-3b	Number of relocated people following hazardous events.
B-4	Number of people whose houses were damaged due to hazardous events.
B-5	Number of people whose houses were destroyed due to hazardous events.
B-6	Number of people who received aid including food and non-food aid due to hazardous events.
B-7	Number of people whose livelihoods were disrupted, destroyed or lost due to hazardous events.

	Target C
C-1	Direct economic loss due to hazardous events in relation to global gross domestic product.
C-2	Direct agricultural loss due to hazardous events.
C-3	Direct economic loss due to industrial facilities damaged or destroyed by hazardous events
C-4	Direct economic loss due to commercial facilities damaged or destroyed by hazardous events.
C-5	Direct economic loss due to houses damaged by hazardous events
C-5b	Damage and loss of administrative buildings.
C-6	Direct economic loss due to houses destroyed by hazardous events
C-7	Direct economic loss due to damage to critical infrastructure caused by hazardous events.
C-8	Direct economic loss due to cultural heritage damaged or destroyed by hazardous events.
C-9	Direct economic loss due to environment degraded by hazardous events.
C-10	Total insured direct losses due to hazardous events

	Target D
D-1	Damage to critical infrastructure due to hazardous events.
D-2	Number of health facilities destroyed or damaged by hazardous events.
D-3	Number of educational facilities destroyed or damaged by hazardous events.
D-4	Number of transportation units and infrastructures destroyed or damaged by hazardous events.
D-4b	Kilometres of road destroyed or damaged per hazardous event.
D-4c	Number of bridges destroyed/damaged by hazardous event.
D-4d	Kilometres of railway destroyed / damaged by hazardous event.

D-4k	Number of airports destroyed / damaged by hazardous event
D-4l	Number of ports destroyed / damaged by hazardous event
D-1 bis	Number of electricity plants / transmission lines destroyed or damaged by hazardous events.
D-5	Number of times basic services have been disrupted due to hazardous events: education (D-5a linked to D-2); water (D-5b linked to D-10)); health (D-5c linked to D-3); sewerage (D-5d); transport (D-5e linked to D-4); government services (D-5f); energy (D -5g); emergency services (D5-h); communications / ICT (D-5i); solid waste (D5-j).
D-14	Number of water and sanitation infrastructures destroyed or damaged by hazardous events

	Target E
E-1	Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030
E-2	Percentage of local governments that adopt and implement local disaster risk reduction strategies in line with national strategies

	Target F		
No.	**Indicator**	**Methodology**	**Data**
Category (a) Financial Resources			
Headline indicator for Target F – F-6alt. *Two formulations.* *The 10+10 suggests that a single indicator is selected considering the following 2 options.* *It is expected that methodology and data will be further developed over time for ODA, and ultimately OOF.*			
Option 1			
F-6alt	Total official international support (ODA plus other official flows) for national DRR actions that is part of **government expenditure**.	Y (ODA) N (OOF)	Y (ODA) N (OOF)
Option 2			
F-6alt	Total official international support (ODA plus other official flows) for national DRR actions that is part of a **government-coordinated spending plan.**	Y (ODA) N (OOF)	Y (ODA) N (OOF)
Supplementary indicators			
F-6a	Total amount of national DRR expenditure.	N	N
F-6b	Total official international support (ODA plus other official flows) for national DRR actions provided by multilateral institutions.	Y (ODA) N (OOF)	Y (ODA) N (OOF)
F-6c	Total official international support (ODA plus other official flows) for national DRR actions provided by bilateral entities.	Y (ODA) N (OOF)	Y (ODA) N (OOF)

Category (b) Technology development and transfer			
Two formulations. *The 10+10 suggests that a single indicator is selected considering the following 2 options.* *It is expected that methodology and data will be developed over time for ODA and ultimately OOF.*			
Option 1			
F-6d	Total official international support (ODA plus other official flows) for international and regional exchange of science, knowledge, technology and innovation (STI) in DRR.	N (ODA) N (OOF)	N (ODA) N (OOF)
Option 2			
F-9	**[Number of countries with international and regional initiatives for the exchange of science, technology and innovation in disaster risk reduction.]**	N	N
Category (c) Capacity building			
Two formulations. *The 10+10 suggests that a single indicator is selected considering the following 2 options.* *It is expected that methodology and data will be developed over time for ODA and ultimately OOF.*			
Option 1			
F-6e	Total official international support (ODA plus other official flows) to strengthen disaster-related statistical capacities.	N (ODA) N (OOF)	N (ODA) N (OOF)
Option 2			
F-13	[**Financial and other resources made available to strengthen the statistical capacity of developing countries in collection, analysis, management and use of disaster risk information.**]	N	N
Some members of the 10+10 also suggests consideration of F-12, F-12alt. as an option.			
Option 1			
F-12	Number of countries engaging in a voluntary **review of progress in the implementation of national DRR strategies**.	Y	Y
Option 2			
F-12 alt	Number of countries engaging in a voluntary**, self-initiated, nationally determined peer review of progress in reducing disaster risk reduction.**	Y	Y
Adequacy			
This indicator is suggested as an analytical function comparing the relevant data from F-6alt and aggregated loss data from Targets C and D.			
F-15	**Annual percentage of cooperation financing for DRR ~~provided by developed countries and received by developing countries~~ compared with the economic losses registered in developing countries.**	Y (ODA) N (OOF)	Y (ODA) N (OOF)

	Target G
G-1	Number of countries that have multi-hazard early warning systems.
G-2	Number of countries that have a multi-hazard monitoring and forecasting system.
G-3	Number of people who have access to early warning information per 100,000 population.
G-4	Percentage of local governments having a contingency or emergency plan to act on early warnings.
G-6	Percentage of local governments that have multi-hazard risk assessment / risk information, with results in an accessible, understandable and usable format for the people.
G-5	Number of countries that have multi-hazard national risk assessment / information, with results in an accessible, understandable and usable format for the people.
G-7	Number of people protected per 100,000 population through pre-emptive evacuation following early warnings.

Follow-up and operationalization of the indicators

In order to support Member States with the operationalization of the indicators in measuring progress for both the Sendai Framework and the 2030 Agenda for Sustainable Development, UNISDR is requested to support further technical work with respect to the development of guidelines and minimum standards for disaster-related data, statistics and analysis, with the engagement of national statistical offices, UNDESA and other relevant partners; to provide Member States with technical support in conducting the statistical data readiness review; and to develop technical guidance material for the testing and roll-out of the indicators and the web-based monitoring system, the Sendai Framework Monitor.

It is anticipated that the outcome of the OIEWG will be used in the finalization of the indicators for the SDGs and the definition of other related technical questions concerning data quality, data collection and compilation, and measurement of progress.

It is also recognized that the Global Platform for Disaster Risk Reduction and the Regional Platforms for Disaster Risk Reduction, supported by UNISDR, will play a critical role in validating the assessment of progress toward the achievement of the seven global targets of the Sendai Framework for Disaster Risk Reduction and the SDGs indicators related to disaster risk reduction.

ANNEX II

Results of informal consultations on terminology related to Disaster Risk Reduction

Affected
People who are affected, either directly or indirectly, by a hazardous event. Directly affected are those who have suffered injury, illness or other health effects; who were evacuated, displaced, relocated or have suffered direct damage to their livelihoods, economic, physical, social, cultural and environmental assets. Indirectly affected are people who have suffered consequences, other than or in addition to direct effects, over time due to disruption or changes in economy, critical infrastructures, basic services, commerce, work or social, health and psychological consequences.

Annotations: People can be affected directly or indirectly. Affected people may experience short-term or long- term consequences to their lives, livelihoods or health and in the economic, physical, social, cultural and environmental assets. In addition, people who are missing or dead may be considered as directly affected.[8]

Build Back Better
The use of the recovery, rehabilitation and reconstruction phases after a disaster to increase the resilience of nations and communities through integrating disaster risk reduction measures into the restoration of physical infrastructure and societal systems, and into the revitalisation of livelihoods, economies and the environment.

Building code
A set of ordinances or regulations and associated standards intended to control aspects of the design, construction, materials, alteration and occupancy of structures which are necessary to ensure human safety and welfare, including resistance to collapse and damage.

Annotations: Building codes can include both technical and functional standards. They should incorporate the lessons of international experience and should be tailored to national and local circumstances. A systematic regime of enforcement is a critical supporting requirement for effective implementation of building codes.

Capacity
The combination of all the strengths, attributes and resources available within a community, society or organization to manage and reduce risks and strengthen resilience.

Annotations: Capacity may include infrastructure, institutions, human knowledge and skills, and collective attributes such as social relationships, leadership and management.

[8] The term Affected may be replaced with similar terms in other language contexts, such as Victims in Spanish. Further, it may have different legal connotations, for example depending on whether Affected or Victims are defined as those requiring support.

Coping capacity *is the ability of people, organizations and systems, using available skills and resources, to manage adverse conditions, risk or disasters. The capacity to cope requires continuing awareness, resources and good management, both in normal times as well as during crises or adverse conditions. Coping capacities contribute to the reduction of disaster risks.*

Capacity assessment *is the process by which the capacity of a group, organisation or society is reviewed against desired goals, and the capacity gaps are identified for further action.*

Capacity development *is the process by which people, organizations and society systematically stimulate and develop their capacities over time to achieve social and economic goals. It is a concept that extends the term of capacity building to encompass all aspects of creating and sustaining capacity growth over time. It involves learning and various types of training, but also continuous efforts to develop institutions, political awareness, financial resources, technology systems, and the wider social and cultural enabling environment.*

Climate change adaptation
The process of adjustment in natural or human systems to actual or expected climate and its effects, which moderates harm or exploits beneficial opportunities.[9]

Annotations: Various types of adaptation can be distinguished, including anticipatory adaptation which takes place before impacts of climate change are observed (also referred to as proactive adaptation); autonomous adaptation that does not constitute a conscious response to climatic stimuli but is triggered by changes in natural or human systems; and planned adaptation, which is the result of a deliberate policy decision.

Climate change adaptation may also be distinguished as incremental adaptation, where the central aim is to maintain the essence and integrity of a system or process at a given scale; and transformational adaptation that changes the fundamental attributes of a system in response to climate and its effects.

Contingency planning
A management process that analyses disaster risks and establishes arrangements in advance to enable timely, effective and appropriate responses.

Annotations: Contingency planning results in organized and coordinated courses of action with clearly identified institutional roles and resources, information processes, and operational arrangements for specific actors at times of need. Based on scenarios of possible emergency conditions or hazardous events, it allows key actors to envision, anticipate and solve problems that can arise during crises. Contingency planning is an important part of overall preparedness. Contingency plans need to be regularly updated and exercised.

[9] This definition and the annotations follow the definition for "Adaptation" by the IPCC as presented in the Glossary of Working Group II for the 5th Assessment Report: https://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-AnnexII_FINAL.pdf

Critical infrastructure
The physical structures, facilities, networks and other assets that are essential to the social and economic functioning of a society or community.

Annotations: Critical infrastructure supports essential services in a society, and the failure of which would have a significant impact on the society. They include electricity, water and transport systems, air and sea ports, communication systems, health and educational facilities, as well as basic services, including public administration and financial services, centres for fire and police.

Critical infrastructure protection plans enhance the resilience of new and existing critical infrastructure systems, including water, transportation and telecommunications infrastructure, educational facilities, hospitals and other health facilities, to ensure that they remain safe, effective and operational during and after disasters and other contingencies in order to provide live-saving and essential services.

Disaster
A serious disruption of the functioning of a community or a society due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts.

Annotations: The effect of the disaster can be immediate and localised, but is often widespread and could last for a long period of time. The effect may test or exceed the capacity of a community or society to cope using its own resources, and therefore may require assistance from external sources, which could include neighbouring jurisdictions, or national or international levels.

***Emergency** is sometimes used interchangeably with the term disaster, as for example in the context of biological and technological hazards or health emergencies, which however can also relate to hazardous events that do not result in the serious disruption of the functioning of a community or society.*

***Disaster damage** occurs during and immediately after the disaster. This is usually measured in physical unites (e.g. square meters of housing, kilometres of roads, etc.), and describes the total or partial destruction of physical assets, disruption of basic services and damages to sources of livelihood in the affected area.*

***Disaster impact** is the total effect, including negative (e.g. economic losses) effects and positive (e.g. economic gains) effects, of a hazardous event or a disaster. The term includes economic, human and environmental impacts, and may include injuries, disease and other negative effects on human physical, mental and social well-being.*

For the purpose of the scope of the Sendai framework (paragraph 15) the following terms are also considered:

- *Small-scale disaster: A type of disaster only affecting local communities which require assistance beyond the affected community.*
- *Large-scale disaster: A type of disaster affecting a society, which requires national or international assistance. Frequent and infrequent disasters: depend on the probability of occurrence and the return period of a given hazard and its impacts. The impact of frequent disasters could be cumulative, or become chronic for a community or a society.*

- *A slow-onset disaster is defined as one that emerges gradually over time. Slow-onset disasters could be associated with e.g. drought, desertification, sea level rise, epidemic disease.*
- *A sudden-onset disaster is one triggered by a hazardous event that emerges quickly or unexpectedly. Sudden-onset disasters could be associated with e.g. earthquake, volcanic eruption, flash flood, chemical explosion, critical infrastructure failure, transport accident.*

Disaster loss database
A set of systematically collected records about disaster occurrence, damages, losses and impacts, compliant with the Sendai Framework monitoring minimum requirements.

Disaster management
The organization, planning and application of measures preparing for, responding to and recovering from disasters.

Annotations: Disaster management may not completely avert or eliminate the threats; it focuses on creating and implementing preparedness and others plans to decrease the impact of disasters and build back better. Failure to create and apply a plan could lead to damage to life, assets and lost revenue.

***Emergency management** is also used, sometimes interchangeably with the term disaster management, particularly in the context of biological and technological hazards and for health emergencies. While there is a large degree of overlap, an emergency can also relate to hazardous events that do not result in the serious disruption of the functioning of a community or society.*

Disaster Risk
The potential loss of life, injury, destroyed or damaged assets which could occur to a system, society or a community in a specific period of time, determined probabilistically as a function of hazard, exposure, vulnerability and capacity.

Annotations: The definition of disaster risk reflects the concept of hazardous events and disasters as the outcome of continuously present conditions of risk. Disaster risk comprises different types of potential losses which are often difficult to quantify. Nevertheless, with knowledge of the prevailing hazards and the patterns of population and socio-economic development, disaster risks can be assessed and mapped, in broad terms at least.

Beyond expressing the probability of a hazardous event and its consequences, it is crucial to recognize that disaster risk can be inherent or can be created within social systems. It is important to consider the social contexts in which risks occur and that people therefore do not necessarily share the same perceptions of risk and their underlying risk factors.

***Acceptable risk**, or tolerable risk, is therefore an important sub-term; the extent to which a risk is deemed acceptable or tolerable depends on existing social, economic, political, cultural, technical and environmental conditions. In engineering terms, acceptable risk is also used to assess and define the structural and non- structural measures that are needed in order to reduce possible harm to people, property, services and systems to a chosen tolerated level, according to codes or "accepted practice" which are based on known probabilities of hazards and other factors.*

Residual risk *is the risk that remains even when effective disaster risk reduction measures are in place, and for which emergency response and recovery capacities must be maintained. The presence of residual risk implies a continuing need to develop and support effective capacities for emergency services, preparedness, response and recovery together with socio-economic policies such as safety nets and risk transfer mechanisms, as part of a holistic approach.*

Disaster Risk Governance
The system of institutions, mechanisms, policy and legal frameworks and other arrangements to guide, coordinate and oversee disaster risk reduction and related areas of policy.

Annotations: Good governance needs to be transparent, inclusive, collective, and efficient to reduce existing risks and avoid creating new ones.

Disaster Risk Management
Disaster risk management is the application of disaster risk reduction policies and strategies to prevent new risk, reduce existing disaster risk and manage residual risk, contributing to the strengthening of resilience and reduction of disaster losses.

Annotations: Disaster risk management actions can be distinguished between prospective disaster risk management, corrective disaster risk management, and compensatory disaster risk management, also called residual risk management.

Prospective risk management *activities address and seek to avoid the development of new or increased disaster risks. They focus on addressing risks that may develop in future if risk reduction policies are not put in place; examples are better land-use planning or disaster-resistant water supply systems.*

Corrective risk management *activities address and seek to remove or reduce disaster risks which are already present and which need to be managed and reduced now. Examples are the retrofitting of critical infrastructure or the relocation of exposed populations or assets.*

Compensatory risk management *activities strengthen the social and economic resilience of individuals and societies in the face of residual risk that cannot be effectively reduced. They include preparedness , response and recovery activities, but also a mix of different financing instruments, such as national contingency funds, contingent credit, insurance and reinsurance, and social safety nets.*

Community Based disaster risk management *promotes the involvement of potentially affected communities in disaster risk management at the local level. This includes community assessments of hazards, vulnerabilities and capacities, and their involvement in planning, implementation, monitoring and evaluation of local action for disaster risk reduction.*

Disaster risk reduction
Disaster risk reduction is aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contributes to strengthening resilience and therefore to the achievement of sustainable development.

Annotations: Disaster risk reduction is the policy objective of disaster risk management and its goals and objectives are defined in disaster risk reduction strategies and plans.

Disaster risk reduction strategies and policies *define goals and objectives across different timescales and with concrete targets, indicators and time frames. In line with the Sendai Framework, these should be aimed at preventing the creation of risk, the reduction of existing risk and the strengthening of economic, social, health and environmental resilience .*
A global, agreed policy of disaster risk reduction is set out in the United Nations' endorsed "Sendai Framework for Disaster Risk Reduction 2015-2030", adopted in March 2015, whose expected outcome over the next 15 years is: "The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries".

Disaster risk management *plans set out the goals and specific objectives for reducing disaster risks together with related actions to accomplish these objectives. They should be guided by the Sendai Framework and considered and coordinated within relevant development plans, resource allocations and programme activities. National level plans need to be specific to each level of administrative responsibility and adapted to the different social and geographical circumstances that are present. The time frame and responsibilities for implementation and the sources of funding should be specified in the plan. Linkages to sustainable development and climate change adaptation plans should be made where possible*

Early Warning System
An interrelated and connected set of hazard monitoring, risk assessment, communication and preparedness activities that enable individuals, communities, governments, businesses and others to take timely action to reduce their risks in advance of hazardous events.

Annotations: Effective "end-to-end" and "people-centred" early warning system comprises four interrelated key elements: 1) risk knowledge based on the systematic collection of data and risk assessments; 2) detection, monitoring, analysis and forecasting of the hazards and possible consequences; 3) dissemination and communication of authoritative, timely, accurate and actionable warnings and associated information on likelihood and impact; and 4) preparedness and local capabilities to respond to the warnings received. These four interrelated components need to be coordinated within and across sectors and multiple levels for the system to work effectively. Failure in one component or lack of coordination across them could lead to the failure of the whole system.

Multi-hazard early warning systems *cover a range of hazards and impacts. They are designed to be used in multi-hazard contexts where hazardous events may occur simultaneously, cascadingly or cumulatively over time, and taking into account the potential interrelated effects. A multi-hazard early warning system increases the efficiency and consistency of warnings through coordinated and compatible mechanisms and capacities, involving multiple disciplines for updated and accurate hazards identification and monitoring for multiple hazards.*

Economic loss
Total economic impact that consists of direct economic loss and indirect economic loss.

Direct economic loss: the monetary value of total or partial destruction of physical assets existing in the affected area. Direct economic loss is nearly equivalent to physical damage.
Indirect economic loss: a decline in economic value added as a consequence of direct economic loss and/or human and environmental impacts.

Annotations: Example of physical assets that are the basis for calculating direct economic loss include homes, schools, hospitals, commercial and governmental buildings, transport, energy, telecommunications infrastructures and other infrastructure; business assets and industrial plants; production such as crops, livestock and production infrastructure. They may also encompass environmental assets and cultural heritage.

Direct economic loss *usually happen during the event or within the first few hours after the event and are often assessed soon after the event to estimate recovery cost and claim insurance payments. These are tangible and relatively easy to measure.*

Indirect economic loss *includes micro-economic impacts (e.g. revenue declines owing to business interruption), meso-economic impacts (e.g. revenue declines owing to impacts on natural assets, interruptions to supply chains or temporary unemployment) and macro-economic impacts (e.g. price increases, increases in government debt, negative impact on stock market prices, and decline in GDP). Indirect losses can occur inside or outside of the hazard area and often with a time lag. As a result they may be intangible or difficult to measure.*

Evacuation
Moving people and assets temporarily to safer places before, during or after the occurrence of a hazardous event.

Annotations: Evacuation plans refer to the arrangements established in advance to enable the moving of people and assets temporarily to safer places before, during or after the occurrence of a hazardous event.

Exposure
The people, infrastructure, housing, production capacities and other tangible human assets located in hazard-prone areas.

Annotations: Measures of exposure can include the number of people or types of assets in an area. These can be combined with the specific vulnerability of the exposed elements to any particular hazard to estimate the quantitative risks associated with that hazard in the area of interest.

Extensive risk
The risk of low-severity, high-frequency hazardous events and disasters, mainly but not exclusively associated with highly localized hazards.

Annotations: *Extensive risk is usually high where communities are exposed to, and vulnerable to, recurring localised floods, landslides storms or drought. Extensive risk is often associated with poverty, urbanization and environmental degradation.*

Hazard
A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation.

Annotations: Hazards may be natural, anthropogenic or socio-natural in origin.
***Natural hazards** are predominantly associated with natural processes and phenomena.*
***Anthropogenic hazards**, or man-made hazards, are induced entirely or predominantly by human activities and choices.*[10]
*Several hazards are **socio-natural** in that they are associated with a combination of natural and anthropogenic factors, including environmental degradation and climate change.*

Hazards may be single, sequential or combined in their origin and effects. Each hazards is characterised by its location, intensity or magnitude, frequency and probability.

***Multi-hazard** means the (1) selection of multiple major hazards that the country faces, and (2) specific contexts where hazardous events may occur simultaneously, cascadingly or cumulatively over time, and taking into account the potential interrelated effects.*

Hazards include (as mentioned in the Sendai Framework for Disaster Risk Reduction and in alphabetical order) biological, environmental, geological, hydro-meteorological and technological processes and phenomena.

***Biological hazards** are of organic origin or conveyed by biological vectors, including pathogenic micro-organisms, toxins and bioactive substances. Examples are bacteria, viruses or parasites as well as venomous wildlife and insects, poisonous plants, and mosquitoes.*
***Environmental hazards** may include chemical*[11]*, natural and biological hazards. They can be created by environmental degradation, physical or chemical pollution in the air, water and soil. However, many of the processes and phenomena that fall into this category may be termed drivers of hazard and risk rather than hazards in themselves, such as soil degradation, deforestation, loss of biodiversity, salinization and sea level rise.*
***Geological or geophysical hazards** originate from internal earth processes. Examples are earthquakes, volcanic activity and emissions, and related geophysical processes such as mass movements, landslides, rockslides, surface collapses, and debris or mud flows. Hydro-meteorological factors are important contributors to some of these processes. Tsunamis are difficult to categorize; although they are triggered by undersea earthquakes and other geological events, they essentially become oceanic process that is manifested as a coastal water-related hazard.*
***Hydro-meteorological hazards** are of atmospheric, hydrological or oceanographic origin. Examples are tropical cyclones (also known as typhoons and hurricanes), floods including flash floods, drought, heatwaves and cold spells and coastal storm surges. Hydro-meteorological conditions may also be a factor in other hazards such as landslides, wildland fires, locust plagues, epidemics, and in the transport and dispersal of toxic substances and volcanic eruption material.*
***Technological hazards** originate from technological or industrial conditions, dangerous procedures, infrastructure failures or specific human activities. Examples include industrial pollution, nuclear radiation, toxic wastes, dam failures, transport accidents, factory explosions, fires and chemical spills. Technological hazards also may arise directly as a result of the impacts of a natural hazard event.*

[10] This term does not include the occurrence or risk of armed conflicts and other situations of social instability or tension which are subject to International Humanitarian Law and national legislation.
[11] Chemical hazards are not mentioned specifically in the Sendai Framework, however both environmental and technological hazards may also include chemical hazards. For definitions of chemical hazards, please refer to the relevant UN Conventions such as the Rotterdam Convention, the Hazardous Chemicals and Wastes Convention and the Stockholm Convention on Persistent Organic Pollutants.

Hazardous Event
The manifestation of a hazard in a particular place during a particular period of time.

Annotations: Severe hazardous events can lead to a disaster as a result of the combination of hazard occurrence and other risk factors.

Intensive risk
Intensive risk is used to describe the risk of high-severity, mid to low-frequency disasters, mainly associated with major hazards.
Annotations: Intensive risk is mainly a characteristic of large cities or densely populated areas that are not only exposed to intense hazards such as strong earthquakes, active volcanoes, heavy floods, tsunamis, or major storms but also have high levels of vulnerability to these hazards.

Mitigation
The lessening or minimising of the adverse impacts of a hazardous event.

Annotations: The adverse impacts of hazards, in particular natural hazards, often cannot be prevented fully, but their scale or severity can be substantially lessened by various strategies and actions. Mitigation measures include engineering techniques and hazard-resistant construction as well as improved environmental and social policies and public awareness. It should be noted that in climate change policy, "mitigation" is defined differently, being the term used for the reduction of greenhouse gas emissions that are the source of climate change.

National platform for disaster risk reduction
A generic term for national mechanisms for coordination and policy guidance on disaster risk reduction that are multi-sectoral and inter-disciplinary in nature, with public, private and civil society participation involving all concerned entities within a country.

Annotations: Effective government coordination forums are composed of relevant stakeholders at national and local levels and have a designated national focal point. F or such a mechanisms to have a strong foundation in national institutional frameworks further key element and responsibilities should be established through laws, regulations, standards and procedures, including: clearly assigned responsibilities and authority; build awareness and knowledge of disaster risk through sharing and dissemination of non-sensitive disaster risk information and data; contribute to and coordinate reports on local and national disaster risk; coordinate public awareness campaigns on disaster risk; facilitate and support local multi-sectoral cooperation (e.g. among local governments); contribute to the determination of and reporting on national and local disaster risk management plans and all policies relevant for disaster risk management.

Preparedness
The knowledge and capacities developed by governments, response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current disasters.

Annotations: Preparedness action is carried out within the context of disaster risk management and aims to build the capacities needed to efficiently manage all types of emergencies and achieve orderly transitions from response through to sustained recovery.
Preparedness is based on a sound analysis of disaster risks and good linkages with early warning systems, and includes such activities as contingency planning, stockpiling of equipment and supplies, the development of arrangements for coordination, evacuation and public information, and associated training and field exercises. These must be supported by formal institutional, legal

and budgetary capacities. The related term "readiness" describes the ability to quickly and appropriately respond when required.

*A **preparedness plan** establishes arrangements in advance to enable timely, effective and appropriate responses to specific potential events or emerging situations that might threaten society or the environment.*

Prevention
Activities and measures to avoid existing and new disaster risks.

Annotations: Prevention (i.e. disaster prevention) expresses the concept and intention to completely avoid potential adverse impacts of hazardous events. While certain risks cannot be eliminated, prevention aims at reducing vulnerability and exposure in such contexts where as a result the risk of disaster is removed. Examples include dams or embankments that eliminate flood risks, land-use regulations that do not permit any settlement in high risk zones, seismic engineering designs that ensure the survival and function of a critical building in any likely earthquake and immunisation against vaccine-preventable diseases. Prevention measures can also be taken in or after a hazardous event or disaster to prevent secondary hazards or their consequences such as measures to prevent contamination of water.

Reconstruction
The medium and longer-term rebuilding and sustainable restoration of resilient critical infrastructures, services, housing, facilities and livelihoods required for full functioning of a community or a society affected by a disaster.

Recovery
The restoring or improving of livelihoods, health, as well as economic, physical, social, cultural and environmental assets, systems and activities, of a disaster-affected community or society, aligning with the principles of sustainable development, including build back better, to avoid or reduce future disaster risk.

Rehabilitation
The restoration of basic services and facilities for the functioning of a community or a society affected by a disaster.

Residual risk
The risk that remains in unmanaged form, even when effective disaster risk reduction measures are in place, and for which emergency response and recovery capacities must be maintained.

Annotations: The presence of residual risk implies a continuing need to develop and support effective capacities for emergency services, preparedness, response and recovery together with socio-economic policies such as safety nets and risk transfer mechanisms, as part of a holistic approach.

Resilience
The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.

Annotations: Resilience means the ability to recover or come back from a shock. The resilience of a community in respect to any hazard or event is determined by the degree to which the

community has the necessary resources and is capable of organizing itself both prior to and during times of need.

Response
Actions taken directly before, during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

Annotations: Disaster response is predominantly focused on immediate and short-term needs and is sometimes called disaster relief. Effective, efficient and timely response relies on risk-informed preparedness measures, including the development of the response capacities of individuals, communities, organizations, countries and the international community.
The institutional elements of response often include provision of emergency services and public assistance by public and private sectors and community sectors, as well as community and volunteer participation. Emergency services are a critical set of specialised agencies that have specific responsibilities in serving and protecting people and property in emergency and disaster situations. They include civil protection authorities, police and fire services among many others.The division between the response stage and the subsequent recovery stage is not clear-cut. Some response actions, such as the supply of temporary housing and water supplies, may extend well into the recovery stage.

Retrofitting
Reinforcement or upgrading of existing structures to become more resistant and resilient to the damaging effects of hazards.

Annotations: Retrofitting requires consideration of the design and function of the structure, the stresses that the structure may be subject to from particular hazards or hazard scenarios, and the practicality and costs of different retrofitting options. Examples of retrofitting include adding bracing to stiffen walls, reinforcing pillars, adding steel ties between walls and roofs, installing shutters on windows, and improving the protection of important facilities and equipment.

Risk assessment
A quantitative approach to determine the nature and extent of risk by analysing potential hazards and evaluating existing conditions of exposure and vulnerability that together could harm people, property, services, livelihoods and the environment on which they depend.

Annotations: Risk assessments include: the identification of hazards, a review of the technical characteristics of hazards such as their location, intensity, frequency and probability; the analysis of exposure and vulnerability including the physical, social, health, environmental and economic dimensions, and the evaluation of the effectiveness of prevailing and alternative coping capacities in respect to likely risk scenarios.

Risk information
Comprehensive information on all dimensions of risk including hazards, exposure, vulnerability and capacity related to persons, communities, organizations and countries and their assets.

Annotations: Risk information includes all studies, information and mapping required to understand the risk drivers and underlying risk factors.

Risk transfer
The process of formally or informally shifting the financial consequences of particular risks from one party to another whereby a household, community, enterprise or state authority will obtain resources from the other party after a disaster occurs, in exchange for ongoing or compensatory social or financial benefits provided to that other party.

Annotations: Insurance is a well-known form of risk transfer, where coverage of a risk is obtained from an insurer in exchange for ongoing premiums paid to the insurer. Risk transfer can occur informally within family and community networks where there are reciprocal expectations of mutual aid by means of gifts or credit, as well as formally where governments, insurers, multi-lateral banks and other large risk-bearing entities establish mechanisms to help cope with losses in major events. Such mechanisms include insurance and re-insurance contracts, catastrophe bonds, contingent credit facilities and reserve funds, where the costs are covered by premiums, investor contributions, interest rates and past savings, respectively.

Structural and non-structural measures
Structural measures are any physical construction to reduce or avoid possible impacts of hazards, or application of engineering techniques to achieve hazard resistance and resilience in structures or systems. Non-structural measures are measures not involving physical construction, which use knowledge, practice or agreement to reduce risks and impacts, in particular through policies and laws, public awareness raising, training and education.

Annotations: Common structural measures for disaster risk reduction include dams, flood levies, ocean wave barriers, earthquake-resistant construction, and evacuation shelters. Common non-structural measures include building codes, land use planning laws and their enforcement, research and assessment, information resources, and public awareness programmes. Note that in civil and structural engineering, the term "structural" is used in a more restricted sense to mean just the load- bearing structure, with other parts such as wall cladding and interior fittings being termed non- structural.

Underlying disaster risk driver
Processes or conditions, often development-related, that influence the level of risk by increasing levels of exposure and vulnerability or reducing capacity.

Annotations: Underlying disaster risk drivers – also referred to as underlying disaster risk factors – include poverty and inequality, climate change and variability, unplanned and rapid urbanization, lack of risk considerations in land management and environmental and natural resource management, as well as compounding factors such as demographic change, weak institutional arrangements, non-risk- informed policies, lack of regulation and incentives for private disaster risk reduction investment, complex supply chains, limited availability of technology, unsustainable uses of natural resources, declining ecosystems, pandemics and epidemics.

Vulnerability
The conditions determined by physical, social, economic and environmental factors or processes, which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards.

Annotations: For positive factors which increase the ability of people to cope with hazards see also the definition and annotations of Capacity.