



Subsidiary Body for Implementation

Thirty-sixth session

Bonn, 14–25 May 2012

Item 9 of the provisional agenda

Approaches to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change to enhance adaptive capacity¹

– Activities to be undertaken under the work programme

Report on the expert meeting on assessing the risk of loss and damage associated with the adverse effects of climate change

Note by the secretariat

Summary

This report provides a summary of the expert meeting on assessing the risk of loss and damage associated with the adverse effects of climate change, held in Tokyo, Japan, from 26 to 28 March 2012. The meeting discussions focused on the different aspects of the risk assessment process, including (a) the data and information requirements for assessing impacts and climate risks; (b) methods and tools for risk assessment, including their requirements, strengths and weaknesses; (c) capacity needs for applying risk assessment methods on the ground; and (d) linking risk assessment with decision-making. The report includes a summary of the key issues addressed at the meeting and common issues/areas identified in furthering the work on loss and damage in developing countries that are particularly vulnerable to adverse effects of climate change.

¹ Decision 1/CP.16, paragraphs 26–29.

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I. Introduction

A. Mandate

1. The Subsidiary Body for Implementation (SBI), at its thirty-fourth session,² and the Conference of the Parties (COP), at its seventeenth session, requested the secretariat to organize an expert meeting, to be held before the thirty-sixth session of the SBI, on assessing the risk of loss and damage associated with the adverse effects of climate change and the current knowledge on the same.³

2. The meeting was to take into account inputs from relevant organizations and other stakeholders, and drawing on expertise within and outside the Convention, with a view to generating an adequate knowledge base for the discussion under thematic area 2 of the work programme on loss and damage. The meeting took into account the following four issues in accordance with the mandate:⁴

(a) What are the data and information requirements for assessing impacts and climate risk, at different levels and for a broad range of sectors and ecosystems? What data are available and where are the gaps?

(b) What methods and tools are available for risk assessment, including their requirements, strengths and weaknesses, and can they address social and environmental impacts?

(c) What are the capacity needs for applying risk assessment methods on the ground, including for facilitating their application in developing countries?

(d) How can the results of risk assessments be optimally formulated in order to support decision-making? What are the desired methods for presenting the results of risk assessment exercises so that they drive decision-making?

3. The COP further requested the secretariat to make the report on the expert meeting available for consideration by the SBI at its thirty-sixth session.⁵

B. Scope of the note

4. This report draws upon the presentations and discussions, which took place at the expert meeting and contains:⁶

(a) A description of the meeting proceedings (chapter II);

(b) A summary of the key issues addressed during the introductory and thematic sessions of the meeting (chapter III);

(c) A summary of the common issues/areas identified (chapter IV).

² FCCC/SBI/2011/7, paragraph 111.

³ Decision 7/CP.17, paragraph 6.

⁴ Decision 7/CP.17, paragraph 2 and annex.

⁵ Decision 7/CP.17, paragraph 7(a).

⁶ The relevant documentation related to the workshop is available on the UNFCCC website at <<http://unfccc.int/6597>>.

C. Possible action by the Subsidiary Body for Implementation

5. The SBI may wish to consider this report at its thirty-sixth session, together with the outcomes of other intersessional activities, in its general consideration of the implementation of the work programme on loss and damage with a view to making recommendations on loss and damage to the COP for its consideration at its eighteenth session.

D. Background

6. The COP adopted the Cancun Adaptation Framework at COP 16 as part of the Cancun Agreements, in order to enhance action on adaptation, including through international cooperation and coherent consideration of matters related to adaptation under the Convention.

7. Under the Cancun Adaptation Framework, the COP established a work programme⁷ to consider approaches to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change, and requested the SBI to agree on the activities outlined under the work programme and to make recommendations on loss and damage to the COP for its consideration at its eighteenth session.⁸

8. In accordance with the conclusions of SBI 34, the following three thematic areas are to be taken into consideration in the implementation of the work programme on loss and damage:

(a) Thematic area 1: Assessing the risk of loss and damage associated with the adverse effects of climate change and the current knowledge on the same;

(b) Thematic area 2: A range of approaches to address loss and damage associated with the adverse effects of climate change, including impacts related to extreme weather events and slow onset events, taking into consideration experience at all levels;

(c) Thematic area 3: The role of the Convention in enhancing the implementation of approaches to address loss and damage associated with the adverse effects of climate change.

9. At the seventeenth session of the COP, Parties agreed on activities to be undertaken in the course of 2012,⁹ including a request for the SBI to address issues related to thematic area 1 mentioned in paragraph 8(a) above, at the expert meeting mandated to be held before the thirty-sixth session of the SBI, taking into account inputs from relevant organizations and other stakeholders, and drawing on expertise within and outside the Convention, with a view to generating an adequate knowledge base for the discussion under thematic area 2 mentioned in paragraph 8(a) above.

E. Proceedings

10. The expert meeting on assessing the risk of loss and damage associated with the adverse effects of climate change took place in Tokyo, Japan, from 26 to 28 March 2012. It was organized by the secretariat in collaboration with the Ministry of the Environment, Japan, and the United Nations University (UNU). The World Meteorological Organization

⁷ Decision 1/CP.16, paragraph 26.

⁸ Decision 7/CP.17, paragraph 1.

⁹ Decision 7/CP.17, paragraphs 1–15.

(WMO) and the Climate and Development Knowledge Network supported the participation of some experts. The meeting was chaired by Mr. Samuel Ortiz Basualdo, Vice-Chair of the SBI.

11. The meeting was attended by 81 representatives from Parties, United Nations agencies, international, regional and national organizations, civil society, the private sector and research/academic institutions active in the areas of adaptation, climate-related disaster risk reduction (DRR) and disaster risk management (DRM), including financial, sectoral and developmental aspects, at all levels.

12. Following the opening of the workshop and the welcome address by Mr. Hideki Minamikawa, Vice-Minister, Ministry of the Environment, Japan, an introductory framing session (session 1) consisting of two parts took place. The first part focused on the multiple aspects of loss and damage, and included presentations examining the issue of loss and damage in the larger context, in particular from the perspectives of DRR, insurance and financial risk management. The second part consisted of a presentation on the linkages between loss and damage and national adaptation plans to be formulated under the Cancun Adaptation Framework, followed by a plenary discussion to share participants' views on their perceptions of loss and damage and the significance of loss and damage discourse in the context of climate change and climate resilient development.¹⁰

13. Four thematic sessions subsequently took place, each focusing on the four issues mentioned in paragraph 2 above (sessions 2–5). Session 2 on the data and information requirements for assessing impacts and climate risk, consisted of an overview presentation of the latest developments in risk modelling as a tool for understanding and managing extreme risks, followed by two sets of panel discussions to address the availability and accessibility of climate and hazard data, as well as data and information on vulnerability and exposure.

14. Session 3 focused on methods and tools for risk assessment, in two parts: the first part reviewing selected country experience, specifically that of Thailand and the United Kingdom of Great Britain and Northern Ireland, and the second part reviewing current practices at the regional level, in particular Africa and the Pacific, as well as in the context of slow onset events and from the sectoral perspective. In addition, a presentation on the background paper prepared for the meeting helped participants understand the key strengths and limitations of existing approaches, methods and tools, as well as their underlying data requirements.¹¹

15. Session 4 addressed, through breakout groups,¹² a variety of assessment approaches and capacity needs as well as ways to facilitate the application of assessment methods on the ground in different regional and national contexts.

16. Session 5 on linking risk assessment with decision-making, commenced with a contextualization of issues discussed in the previous technical sessions, followed by two sets of panel discussions: one on Parties' views on issues mentioned in paragraph 2(d) above; while the second comprised representatives of stakeholder organizations to share views on ways in which they can support Parties in effectively linking risk assessment with decision-making. Following report-back from rapporteurs on a summary of the key points of the three-day discussion, and the sharing of key 'take home' messages by participants, the meeting concluded with closing remarks by the chair.

¹⁰ All the presentations given at the workshop are available on the UNFCCC website at <<http://unfccc.int/6597>>.

¹¹ The background paper is available on the UNFCCC website at <http://unfccc.int/files/adaptation/cancun_adaptation_framework/loss_and_damage/application/pdf/background_paper_full.pdf>.

¹² Organized by region: Africa, Asia, Latin America, and small island developing States (SIDS).

II. Summary of the key issues addressed at the meeting

17. Participants represented a wide spectrum of adaptation, development, DRR and DRM stakeholder groups, from the public and private sectors as well as from civil society and research entities. This enabled discussions to include diverse perspectives on the risk of loss and damage in terms of hazards, vulnerability and exposure from varying contexts. In addressing loss and damage within a country or region, assessing such risk was widely considered as a first step, including identifying assets that are at risk according to national and regional needs and priorities.

18. This chapter firstly summarizes key points related to linking assessments with decision-making (II–A) followed by the key cross-cutting issues related to different aspects of the risk assessment process (II–B). Next, it summarizes some of the key points raised in terms of data/information (II–C), methods and tools (II–D), as well as capacity needs for applying assessment methods on the ground (II–E).

A. Linking risk assessment with decision-making

19. A number of presentations on experience to date underlined the importance of making information derived from risk assessment meaningful for decision makers, including by translating technical aspects of risk assessment and presenting clear options for implementation.

1. Defining decision-makers

20. Understanding the political reality of every country and defining loss and damage in the national context is an important step, partly because understanding the context facilitates better ways to communicate quantified data or other types of information from risk assessment. In order to clearly disseminate messages, some participants stressed the need to first define who are the decision makers and understand which kinds of decisions need to be taken (e.g. at the international level for negotiations purposes, at the national level for sectoral planning) in order to help articulate effective communication methods.

2. Effective communication

21. Various views were shared regarding effective ways to communicate the risk of loss and damage. Some recent experience highlighted cases where communicating quantified risk of loss and damage was useful in raising awareness and enhancing policy responses. Some participants felt that giving examples may convey more meaning, rather than providing numerical data in that, if a specific sector is sensitive to certain weather variability or hazards, for example, rainfall, this sensitivity may increase in the future due to increasing rainfall, thus the exact quantity may not be as important as providing a relevant example in soliciting a policy response.

22. In increasing the confidence level of policy-makers towards the results of risk assessment, sharing information with national policy-makers about how assessments are performed (methods) proved to be useful in the case of the UK Climate Change Risk Assessment 2012 (UKCCRA). In the case of conveying the risk of loss and damage related to sea-level rise (SLR) and storm surges, visual aids (graphics, Google Earth, etc.) were also found to be helpful. In another case, presenting simple onset plots with relative magnitude and presenting the wide range of possible outcomes helped policy-makers to grasp the relevant messages and ensure that decisions address the range of uncertainty. In general, participants felt that shifting from a technical probabilistic language to a sectorally driven one is necessary to increase the effectiveness of risk communication. In addition,

effort also needs to be targeted at sensitizing financial policy-makers to the information and results arising from risk assessment.

3. Limitation of numerical data

23. It is important to acknowledge that numerical data are not sufficient in conveying a comprehensive range of risks of loss and damage, since available estimates on losses typically lack numbers on non-economic losses such as culture and heritage. Given that such losses are often unquantifiable, participants agreed that a full quantification of losses is not possible or needed. Similarly, the question remains regarding how much data/information is required. In addition, some participants emphasized that the absence of data should not precondition decisions to be made under the Convention process, stressing that other non-traditional or non-conventional ways of assessment can be part of the conversation.

4. Decision-making under uncertainty

24. While it was frequently noted that a perfect set of information is never available, participants noted that an understanding of how societies and systems are sensitive to today's climate can help to inform planning for the future. In this context, directional climate changes (precision is not necessary) is useful in taking further steps in addressing loss and damage. The experience gained by UKCCRA, while not fully taking into account future and planned adaptation policies, shows that a baseline for risk can be provided which can be used to test different policy options, an approach deemed useful for enhancing decision-making.

5. Underlying risk drivers

25. Information arising from the implementation of the Hyogo Framework for Action indicated that, although progress has been made in the creation of legislation and institutional arrangements in emergency management, addressing underlining risk drivers, such as land use and land management, poverty and weak governance, is an area of slow progress. In this regard, DRR experts stressed the importance of identifying drivers that increase and decrease potential losses and damages, in targeting further policy intervention. In addition, the level of investment in addressing vulnerability, according to reporting from the United Nations International Strategy for Disaster Reduction (UNISDR), remains low, especially in low-income countries.

B. Cross-cutting issues

1. National buy-in for successful regional cooperation

26. Discussions affirmed that regional cooperation, whether in the Pacific, Caribbean Africa, Latin America or Asia, has already enabled considerable synergy and beneficial collaboration, particularly in data sharing and knowledge exchange.

27. Reporting on recent experience from the Pacific in its creation of the Pacific Risk Information System (PRIS)¹³ – a platform for sharing data and making it available online, the representative of the Secretariat of the Pacific Community emphasized that in order for such regional cooperation and partnerships to be sustainable, national buy-in and high-level engagement is required. This can be achieved, for example, by making links to initiatives being planned in each country. It is also essential to ensure that information is returned back to countries at the end of the collaborative process to enable them to apply the

¹³ Created under the Pacific Catastrophic Risk Assessment and Financing Initiative.

information in the national context. The experience of the Pacific drew attention to the importance of recognizing that collaboration does not happen spontaneously, and continuous effort must be put into ensuring that such collaboration is fostered throughout the lifetime of the activity.

2. Institutional buy-in

28. Similarly, institutional buy-in is critical in enhancing different aspects of the risk assessment process, especially in improving access to and sharing of data, and in enhancing capacity building efforts as well as in facilitating further cooperation among international and regional actors, such as for forming partnerships. This includes enhancing institutional ownership and the ability to cooperate with other stakeholders in the assessment process.

29. While cognizant of the very different national and regional circumstances, discussions reaffirmed a further need to build on this existing work and not to begin the process from scratch. Participants generally agreed that there is a broad base of information inside and outside of the climate change process; therefore it is necessary to identify good practices insofar as these apply to different contexts.

3. Coordination among national actors

30. Limited cooperation among government institutions within the context of sustainable development planning was also viewed as a hindrance to effectively addressing the risk of loss and damage.

31. For example, the representative from Thailand, in referring to the severe flooding across Thailand in 2011, informed the meeting of the multiple challenges in effective water resource management amid increasing frequency and intensity of climate-related disasters, including: degradation and deforestation of the watershed due to encroachment, disunity in water management planning systems (multiple models with different levels of accuracy in operation by different planners, the relevant datasets are stored and assessed independently), lack of a long-term water management plan, unsystematic and outdated databases and obsolete laws and regulations.

32. Greater engagement of statistical institutes and planning ministries is also an essential part of ensuring a nationally coordinated approach, as well as the creation or enhancement of linkages between climate products and services providers, policy/decision makers and end-users, at the national level. Finally, addressing loss and damage would require action on multiple fronts, attending to current needs while planning for future needs due to climate change impacts.

4. Documentation and knowledge sharing

33. Discussions from a diverse range of perspectives brought attention to the need to better document relevant work currently being undertaken at different levels, to assist further learning, within and across regions, by vulnerable countries in their attempts to better manage the risk of loss and damage, as well as to develop a comprehensive solution to assist countries to build resilience. In addition, some participants felt that documentation efforts should also extend to include an assessment of experience with regional-level risk management efforts, and the methodologies that underlie their design, including experience with financial intermediation through risk financing and insurance for the most vulnerable. South–South as well as North–South cooperation within and across the regions was viewed as useful in this regard.

34. Identifying and valuing assets (including environmental, physical, cultural), as frequently noted, is an indispensable step in managing climate-related risks. To this end, documenting and sharing lessons learned from good practices for addressing each type of

risk is necessary since countries face a range of risks which require ranges of options to solve them.

35. Stakeholders from the finance sector pointed out that the largest pools of capital¹⁴ and the various financial and investment mechanisms and intermediaries,¹⁵ are often not sensitized or receptive to the adaptation agenda under the Convention, including on loss and damage. The global finance and investment sector began from a broad, high-level standpoint to quantify economic and insured losses, stemming from climate change and natural disasters. However, at sectoral and asset-class levels, the work to disaggregate climate change related losses and damages is nascent and is not, to a large extent, factored in to mainstream banking, insurance and investment decisions and business actions.

36. Referring to the level of resources that is mobilized each year,¹⁶ the representative from Blended Capital Group highlighted the significance of improving knowledge sharing on UNFCCC processes, with a view to sensitizing the provision of finance around loss and damage and facilitating the understanding by the finance sector on entry points for engagement. There is an opportunity for the loss and damage process under the Convention to accelerate the learning process of global financial stakeholders to bridge the gap between how companies develop their business and the deliberations under the Convention.

5. Sustainable finance

37. Financial resources, as frequently noted by participants from developing country Parties, are crucial in enhancing all the components of the risk assessment processes for loss and damage. There is a need to identify innovative financing options to ensure sustainable funding for risk assessments in developing countries. One of the recurrent questions at the meeting was how developing country Parties will be supported to address loss and damage, including its risk assessment component, in terms of tools and modalities.

6. Reality of disasters on the ground today

38. The Thai experience with the 2011 floods, together with the key findings on flooding from UKCCRA,¹⁷ reminded participants of the potentially high level of economic and social losses and damages that countries currently face, including on major infrastructure and productive sectors.¹⁸ Despite gaps in availability of climate modelling, for example, in highly localized but frequent events such as flash floods (no operational numerical model can predict flash floods with precision), it was emphasized that investment was urgently needed in priority areas such as water management, and that the need for risk assessment should not hinder taking action. Presentations and discussions confirmed that there is already a range of talents and capacities in place, as well as, in some cases, reasonably adequate data that can be used as input to the risk assessment process. This should be utilized in spite of unfulfilled informational needs.

¹⁴ For example, sovereign wealth funds, pension funds, insurance reserves.

¹⁵ For example, stock and bond markets, bank finance, asset management structures, private wealth management mechanisms.

¹⁶ According to data reported by Blended Capital Group, bond markets mobilized USD 95 trillion in 2011, the global insurance industry had USD 4.3 trillion premium take in 2010 with assets of USD 43 trillion.

¹⁷ Key findings from the UKCCRA include that damage costs from flooding could rise from the current STG 1.2 billion to STG 2–12 billion by the 2080s; and pressure on water resources (e.g. potential supply/demand deficits of 940–2550 Ml/d in the 2050s for the Thames river basin).

¹⁸ In the case of the Thai floods, previous modelling failed to address real impacts.

C. Data and information for assessing impacts and climate risk

39. Reliable data and information constitute an essential element of the informed assessment of the risk of loss and damage. Risk assessment processes for loss and damage require addressing both the biophysical determinants and socio-economic drivers of risks within a spatial-temporal context. Risk assessment also requires various steps to be followed, including climate and hazard analysis and mapping, analysis of exposure and vulnerability for a broad range of sectors and ecosystems, and estimation of potential losses (e.g. livelihoods, infrastructure, human lives and ecosystems).

1. Climate and hazard data

40. While a number of initiatives are being carried out at various levels under the auspices of the WMO, including the Global Framework for Climate Services, to improve the availability of hydrometeorological data (both historical and real-time), there remains a large disparity with regard to climate data collection and analysis capability at the national level.¹⁹

41. In this regard, the enhancement of national meteorological services needs to be prioritized in many developing countries. The main areas of challenge as identified at the meeting include: modernization of observation networks, data rescue, enhancement of data management systems, maintenance of a standard hazard database and metadata, and improvement of hazard analysis and mapping tools.

42. At the local level, making available hazard risk information was identified as a major challenge in the majority of developing countries. Enhancing capability to develop and implement comprehensive community risk assessment actions incorporating climate change impact analysis, prediction models, and social and gender considerations, was also considered a key need, especially in Africa.

43. Regional centres are collaborating with national agencies for enhancing research and improving capacity for climate modelling and verification. Such centres are also viewed as having a critical role, especially in the harmonization of data. Participants were informed of examples of regional data pooling to support national met services and to improve weather-related data and modelling.²⁰ However, participants stressed that the role of regional centres is not to replace but to support national centres.

2. Information on impacts

44. Similarly, with regard to data and information on exposure and vulnerability, participants were informed of a number of ongoing efforts to develop datasets at different levels around the world.²¹ These datasets are used for various purposes, including:

¹⁹ An example from Japan showed that the country has an observation network of over 1,000 automated stations to allow for the collection of data for localized events, usage of Regional Climate Model with a 5 km grid to assess local effects, and that its statistical archive dates back to the nineteenth century. On the other hand, in the greater horn of Africa, data coverage is very sparse, data quality is an issue, data contain gaps – not continuous, data is on paper – not easily accessible, according to reporting by Intergovernmental Authority on Development Climate Predictions and Applications Centre in Eastern Africa.

²⁰ Information on current practices by the Caribbean Institute for Meteorology and Hydrology on weather, by Caribbean Community Climate Change Centre on climate modelling, by IGAD-ICPAC on climate monitoring and prediction, and by National Meteorological Service, Deutscher Wetterdienst (DWD (WMO regional climate centre for Europe) were shared during the panel discussion in session 2.

²¹ For example, DaLa (United Nations Economic Commission for Latin America and the Caribbean), Post-disaster Needs Assessment (PDNA), DesInventar, national experience in the Philippines.

establishing a baseline and undertaking trend analysis; prioritizing risk reduction actions; and allocating resources for response and preparedness.

45. However, participants acknowledged that significant gaps remain at all levels. This is partly because existing datasets are built from perspectives (on the basis of other needs) which may not necessarily provide adequate data/information for the purpose of assessing the risk of loss and damage associated with the adverse effects of climate change. For instance, EM-DAT, a global database which was built from the humanitarian perspective, provides useful global statistics on losses related to mortality. However, data on economic and physical asset losses are limited.

3. Accounting and recording disaster losses at national level

46. While recognizing the further scope for making better use of existing information, participants agreed that the informational needs are quite large in assessing the risk of potential losses and damages within a country. Participants were informed that approximately 40 initiatives to build databases to account for losses at the national level are currently taking place worldwide. The representative from UNISDR reported, however, that with the exception of a few countries, data management and processing are not institutionalized within government even though it was viewed as fundamental that the data on loss is available in the public domain for a country to effectively manage risks related to loss and damage.

47. To this end, there is a clear need to increase the number of countries reporting and systematically accounting for disaster losses at the national level; and to obtain and record data on distribution of losses in time and space. These efforts can serve as a baseline for better understanding and informed decision-making to address loss and damage. Lessons learned from the experience of the DRR community also highlighted the importance of stable institutions at the national level in order to avoid undermining investment efforts in this regard.

4. Regional level

48. In the Pacific, where USD 284 million is being lost every year due to disasters,²² a major effort to create one of the largest collections of geo-referenced information in the region is ongoing in order to improve disaster risk modelling and to develop risk financing solutions. Under the Pacific Catastrophic Risk Assessment and Financing Initiative (PCRAFI), data from government datasets are geo-referenced and combined with information on infrastructure and attributes.²³ These efforts have made country risk profiles (exposure summary) available for the first time, highlighting the assets most at risk for decision makers in the region.

49. In Africa, where over 90 per cent of observed natural disasters, 99 per cent of casualties and 50 per cent of economic losses of these disasters are related to weather and climate conditions, the enhancement of hydrometeorological services at both the national

²² For further information on the figures related to the impact of disasters on Pacific islands' economies, see <http://unfccc.int/files/adaptation/cancun_adaptation_framework/loss_and_damage/application/pdf/litea.pdf>.

²³ The Pacific Catastrophe Risk Assessment and Financing Initiative (PCRFI) has modelled losses from tropical cyclones and earthquakes for 15 countries in the Pacific and it includes a comprehensive inventory of the risk exposure data for buildings, infrastructure, population and crops, and a historical hazard catalogue including consequences.

and subregional levels is urgently needed to ensure sustainable development.²⁴ One of the key gaps that the region is facing regarding data and information for assessing the risk of loss and damage is a lack of a systems or capacity that allows national hydrometeorological agencies to store data in high capacity hardware and carry out analysis from a common place.

50. The experience from the Africa Adaptation Programme provided participants with some examples of regional approaches to address these challenges. One such practice is to take a tiered approach and to establish an e-infrastructure.²⁵ Such an approach would also allow for the avoidance of investment in a large system.

5. Challenges of sharing data

51. Another barrier to improving data/information availability is comparability and interoperability of datasets. Data must firstly be digitized and cleaned to allow for effective sharing. Establishing standard procedures for collecting loss and damage data in the region was suggested to be useful in this regard. Other challenges with regard to enhancing open access to information or achieving easy access to data include national laws, policies and decrees on data exchanges and information sharing for national security reasons, to avoid causing potential social disturbances, or to generate revenue from data.²⁶ In this regard, trust-building among stakeholders was called for to enhance accessibility to data. A question also remained as to whether to allow the commercial use of open access data.

6. Information in the private sector domain

52. The discussions were also informed by the latest developments in modelling in terms of climate and weather science, as well as by related insurance and risk management services. Participants acknowledged that the availability of cutting-edge modelling capability to assess loss and damage of physical assets lies mostly within the private sector, especially that related to insurance. Accordingly, there was a general consensus for the need for greater engagement of stakeholders from the private sector, including through public-private partnerships at different levels, in addressing loss and damage.

53. However, a gap was also pointed out in the availability of data within the insurance sector. While insurance companies often have the latest models and a rich data pool to value assets and assess economic losses, the dataset for accounting losses is mainly only available in fairly developed countries and rather limited in developing countries with low penetration of insurance products. In addition, the data and information coverage related to assessing the risk of slow onset events is not as readily available, partly because the insurance approach generally does not apply to risks related to slow-onset events.

D. Methods and tools for risk assessment

54. Using presentations on the recent experiences on methodologies being applied at varying scales and sectors in different regions as a starting point, participants discussed the

²⁴ According to the reporting of the Africa Adaptation Programme (AAP), the AAP is supporting 20 countries in Africa from 2009–2012 with a budget of USD 92 million to support multi-disciplinary, multi-sectoral action to enhance capacity for adaptation in these countries.

²⁵ For instance, a central database and regional centres to combine and store data subregionally for countries that will access the infrastructure through the Internet.

²⁶ Some of the breakout group discussions highlighted opposite cases, such as in Colombia where the sharing of information between all of the actors is mandatory under presidential decree to institutional actors.

strengths and weaknesses of a diverse range of methods, tools and approaches, for both qualitative and quantitative analysis, to assess the risk of loss and damage.²⁷

1. No single solution

55. It was widely agreed that assessing the risk of loss and damage requires a range of approaches and multiple tools. There is no one comprehensive approach, ‘best model’ or ‘global methodology’, which is applicable to the diversity of risks in different contexts. Discussions among Parties reiterated that different approaches have different limitations but each offers distinct value. In this regard, conceptualizing a ‘tool box approach’ was suggested to provide a useful way forward.

2. Actuarial approach

56. Discussion was also informed by an actuarial approach used in quantifying the impacts of a 1–2m SLR at the sectoral scale in the Caribbean, in particular on coastal infrastructure and the tourism sector – a priority sector for the region’s economy. In assessing the magnitude of the losses and damages in these two sectors, the University of Oxford, in collaboration with the United Nations Development Programme office in Barbados and the Organisation of Eastern Caribbean States, CARICOM, and Caribsave, improved the inventories of the coastal infrastructure and assets at risk, and combined SLR and storm surge risks, to quantify the extent of SLR-induced erosion risk. Under this approach, analysis involved costing impacts at different scales (macro, meso and micro)²⁸ and these impacts were split into annual and capital costs (e.g. rebuilding costs, asset value of land loss).²⁹

57. While acknowledging that an actuarial approach allows for a consistent and replicable method to account for and value loss and damage, concern was raised by LDC representatives on the lengthy timeframe that is required to make available necessary data/information in their countries, where data/information availability is currently significantly limited, to enable them to apply such an approach.

3. Slow-onset events

58. Despite experience with an actuarial methodology in the Caribbean, participants acknowledged that the majority of current methods and tools for risk assessment as well as the currently available knowledge are primarily focused on extreme weather events as in the case of IPCC special report on managing the risks of extreme events and disasters (SREX). In comparison, those methods for assessing the risks associated with slow-onset events are much more limited in availability, especially those related to processes other than SLR, such as increased arid/semi-arid areas. There is also a gap in the availability of methodologies for assessing local impacts and losses from macro factors (e.g. ice sheet meltdowns). Developing methodologies for these types of risks, as noted at the meeting, would require further time and effort.

²⁷ Participants were informed by the recent experience on risk assessment initiatives undertaken in Thailand and the United Kingdom, the Pacific and Africa at the regional level, in the context of the health sector and slow-onset events in the Caribbean. For details of the methodologies used in these examples, see <<http://unfccc.int/6597>>.

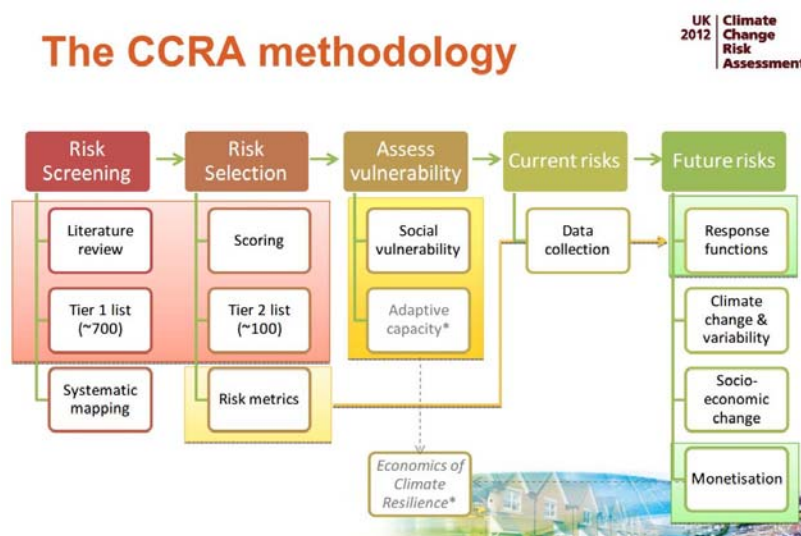
²⁸ Examples of scale such as macro, e.g. state; meso, e.g. sectoral, city, and regional levels; and micro, e.g. individual elements of an economy (such as a major sea ports, individual property price).

²⁹ The results show that the impacts of SLR are transformational to the economies of small island countries and coastal least developed countries, and that coastal erosion significantly amplifies the impacts of SLR which adds to economic losses in the Caribbean. According to the assessment, a 1m SLR will incur average rebuilding costs for tourist resorts for the Caribbean Community of up to 28 per cent of GDP in 2080.

4. Qualitative and quantitative approaches

59. Participants learned from recent experience gained in developing the UKCCRA, which looked at a full range of impacts, including social, economic and environmental, and opportunities for society in a country to help prioritize areas for action in the upcoming national adaptation policy due in 2013. The figure below illustrates this methodology.

Figure 1
Simplified summary of the UK Climate Change Risk Assessment methodology and links with the Economics of Climate Resilience project



Source: Defra. 2012. *The UK Climate Change Risk Assessment 2012 Evidence Report*.

Available at

<<http://randd.defra.gov.uk/Document.aspx?Document=TheUKCCRA2012EvidenceReport.pdf>>.

60. In developing the assessment, a participatory approach was employed in the screening of risks by involving more than 500 stakeholders to identify risks, which resulted in prioritizing 100 risks to study in detail from 11 sectors. The process then involved assessing the sensitivity of each risk to climate by adding projections of future climate and population for each risk, followed by assigning magnitude (logarithmic scale) and confidence scores to each risk. The method also allows for comparison by geographical area of each risk and by confidence scores of all risks, in order to summarize risks for policymakers.

61. The representative of HR Wallingford, an organization that developed the assessment on behalf of the government of the United Kingdom of Great Britain and Northern Ireland, reported that, even where there was good data availability, including those on qualitative aspects of socio-economic factors and social vulnerability, quantifying the current level of risk resulted in a significant amount of work.

62. This, together with concern related to applying an actuarial methodology, reiterated a challenge faced by vulnerable countries with lower capacity to assess risks coupled with the limited availability of data. Given the difficulty of calculating costs of losses and damages in the absence of reliable data, concerns were also raised about whether the precise estimation of the cost should precondition adaptation planning and/or the receipt of support.

63. While acknowledging the importance of making loss and damage cost assessment as accurate as possible for planning purposes, participants also generally agreed that relying

on data and quantitative methods alone is not sufficient to understand and assess the diverse nature of the risk of loss and damage associated with the adverse effects of climate change.

64. In this regard, some of the key lessons learned discussed at the meeting include: engaging the right stakeholders regardless of the scale of assessment and focusing on identifying at-risk sectors; understanding the types of information (e.g. quantitative or qualitative) that are required for the purpose of specific decision-making; including social aspects in the consideration; and improving complementarities and synergies between qualitative and quantitative assessment approaches at various scales.

5. One question at a time

65. With regard to choosing a methodology for assessments, an emerging lesson from experience to date is to first determine the policy question (e.g. defining what is needed to come out of the risk assessment, what is the loss and damage in the larger context of national priorities, sectors and issues, etc.), then choose an assessment approach or methods, which will also drive the type of data/information required.

66. In this regard, taking a step-by-step approach may be a pragmatic way forward rather than attempting to undertake overall loss and damage assessment. This was echoed by another emerging lesson: trying out methods on a small scale and keeping the assessments at a fairly simple level rather than making huge downscaling exercises. These approaches were viewed as helpful for countries to begin to address loss and damage.

67. Other methodological challenges addressed include: not enough attention given to assessing the risks of loss and damage from small and medium scale events; and taking into account the issue of attribution of specific losses to climate related hazards to climate-related hazards in cascading events/disasters.

E. Capacity needs for applying risk assessment methods on the ground

68. Limited capacity to identify and assess assets at risk hinders the prioritization of addressing loss and damage within different regional, national and sectoral contexts. In order to provide for a comprehensive risk profile, participants noted the importance of developing technical and managerial capacity (individual and institutional) to utilize currently available methods and tools for assessing the risk of both physical and livelihood assets, particularly in the context of uncertainty. In terms of training and skills transfer, utilizing South-South modalities in addition to a traditional North-South transfer is also considered important.

69. As a starting point, participants noted the importance of understanding the process and necessary steps in risk assessment, as well as the strengths and limitations of different methods and tools, choosing a method/approach based on the issue under study. Addressing capacity needs in multiple ways is viewed as pragmatic in light of a range of decision makers and stakeholders involved in assessing the risk of loss and damage, as well as varying resource availability.

70. Discussion by the regional breakout groups resulted in the highlighting of commonalities in technical and operational challenges that regions are facing in order to enable effective application in developing countries in each region. This chapter firstly summarizes the cross-cutting capacity needs and challenges for enhancing the application of risk assessment methods on the ground, followed by some of the key region-specific issues that were raised at the meeting.

71. Participants noted that assessments conducted by external consultants can be useful but that investment should be made in building capacity on the ground in order to foster

sustainability for the monitoring of changes occurring and projecting future risks of losses and damages. In this regard, building in-country capacity was widely considered an urgent priority by all regions, including by increasing the involvement of national institutions in work related to analysis and application (e.g. the disaster-poverty interface), as well as by further developing human capital through stakeholder participation and education at university level in the medium and long terms.³⁰ In this context, some of the common key areas for building in-country capacity, as identified at the meeting, include:

(a) *Knowledge management:* In facilitating the application of risk assessment methods on the ground in developing countries, establishing knowledge management mechanisms or platforms was viewed useful in order to enable the efficient dissemination of results and the engagement of all stakeholders and to facilitate the implementation of results. Capability required to record existing hazards and document climate risk analysis outputs for integration within formal policy and planning frameworks at all levels. Raising the awareness of hazards that affect or can affect the community, empowering the transmission of information about their knowledge to other relevant actors, and increasing the ability of community-level stakeholders to conduct participatory vulnerability assessment and mapping, were considered urgent;

(b) *Planning and decision-making processes:* Countries and institutions have different structures, thus capacity needs depend upon the planning and decision-making mechanisms that exist in a particular country and/or region. However, participants generally considered that there is a gap in capacity at all levels of the planning and decision-making process, regarding risk assessment for loss and damage in developing countries. This can partially be addressed by putting in place institutional systems/arrangements at different levels to support different components of risk assessment. Some participants felt that an institutional mapping of sectoral responsibilities (e.g. monitoring and maintaining of sectoral data) is necessary at the national level in the first instance;

(c) *Capacity needs around data and information:* In order to utilize methods for assessments, underlying availability of data and information is essential. Individual and institutional capacity needs around data and information are wide ranging, including: the identification of priority data needs, the generation of and access/sharing of data (which requires monitoring); enhancement of systematic records to minimize data loss at observation stations; data visualization methods; forecasting; enhancing resolution; conducting asset inventories; interpretation to transform data into information; integration (application of information) to develop sector-based impact scenarios and cross-sector risk analysis. In this regard, developing guidelines or regulations for data calibration and data/information sharing and dissemination applicable at different levels may facilitate addressing such needs;

(d) *Small island developing States:* For SIDS, improved data resolution was particularly identified as a priority need as this could facilitate the creation of asset inventories/databases on the scale of data required by these countries. Developing a methodology for using the actuarial approach for valuing the impacts of climate change, was another specific capacity need for these countries as indicated by them, including recommendations on the sufficient level of data required and what must be put in place to achieve it. SIDS proposed to use the development of the Pacific catastrophe risk insurance facility as an example for identifying further capacity-building needs, technology requirements and data needs;

³⁰ Stakeholders identified include the following: public sector entities (including meteorological offices, sectoral ministries/government institutions, statistical departments, local government); communities; private sector; emergency response (e.g. Red Cross); regional centres; development banks and agencies/intergovernmental organizations; universities, academic institutions; and the media.

(e) *Africa*: The region's limited basic capacity (technical and human) to provide relevant information/resources, frequently noted by practitioners from Africa, poses a major barrier to dynamic and long-term adaptation planning, including climate-related risk management. In this regard, the ability to inform NAPAs and community-level action on information arising from impacts and risk analysis is an urgent need. The need for more meteorological stations on the ground was particularly salient for this region, as well as a need for more computational power resources to get up-to-date modelling results. However, some participants from the region raised the issue of safety from vandalism and damage of observing network equipment. To respond to these challenges, the utilization of practical, inexpensive emerging innovative technologies, as noted, may be useful;³¹

(f) *Asia*: Aligning with the nature of climate-related risks in the region, enhancing forecasting capability for increasing spatial and temporal resolution to cover frequent and rapid onset disasters such as flash floods was noted as a priority. Reflecting regional context – rapid urbanization and increasing population and assets exposed to hazard, strengthening in-country ability to forecast exposure over time or with changing hazards – is particularly necessary for technical actors;

(g) *Latin America*: Interpreting and transforming data into meaningful information is considered a barrier to applying risk management methods in this region. Participants stressed the need for mentoring throughout the entire process rather than a one-time assistance. Increasing the number of trained personnel in assessing the health risk – a priority sector for the region, was viewed as an urgent need for the region.

III. Summary of common issues/areas identified

72. The meeting identified some of the common areas and issues in furthering the work on loss and damage under the Convention, including:

(a) *Identifying country priorities*: The challenge in assessing the risk of loss and damage starts in identifying the assets that are at risk due to the adverse effects of climate change. As a first step, countries need to identify their priorities for addressing loss and damage according to their national context and conditions. National communications, National adaptation programmes of action (NAPAs) and other relevant reports may provide sources of national and regional priorities. Recording and accounting of disaster losses and damages at the national level can facilitate further understanding of the risk of loss and damage and aid in the prioritization of policy interventions at all levels;

(b) *Capitalizing support by relevant organizations*: Many relevant organizations and stakeholders active at different levels and sectors have expressed their willingness to support countries in addressing loss and damage. Given the multiple characteristics of loss and damage and the expertise available outside the Convention process, it is important to ensure long-term sustainable engagement of relevant organizations and stakeholders;

(c) *Ensuring space to discuss linkages with ongoing work under and outside the Convention*: Addressing loss and damage under the Convention process amid the wealth of existing relevant knowledge and work outside the Convention calls for further understanding of complementarity and synergies as well as on the delineation of work, in order to ensure resource efficiency and to avoid the duplication of efforts. Similarly, further discussion on the nexus between deliberations under the work programme on loss and

³¹ An example of an in-country technical assistance activity to address some of the region's challenges, introduced at the meeting, includes: the establishing a local network of problem solvers, mentors and advisers, including a help desk to enable rapid response to queries; and actively engaging its universities and research institutions in addressing climate risks.

damage and other ongoing work under the Convention is necessary to facilitate coherent approaches on adaptation under the Convention. In this regard, deliberation on loss and damage also forms part of the wider climate change mitigation and adaptation policy context. It is, therefore, important to find ways of working through these linkages in order to maximize the utility of the loss and damage discourse under the Convention. Taking these linkages into account may also facilitate the development of a clear narrative for and concept of loss and damage, which is important for prioritizing addressing the issue, including for identifying the means of addressing loss and damage;

(d) *Taking holistic views*: Assessing the risk of loss and damage associated with climate change impacts cannot be approached in a singular or isolated context, but it is linked to, and forms part of, a variety of broader contexts, including that of development planning and the larger context of holistic risk assessment. Taking a comprehensive approach to assessing the risk of loss and damage may also facilitate further understanding by policymakers of the scope of the issue since the integrated and comprehensive approaches that take into account the biophysical and socioeconomic context of climate change may provide holistic solutions;

(e) *Recognizing multiple factors*: Though the risk of loss and damage is magnified by climate change, many factors beyond climate change, contribute to loss and damage, including a variety of socioeconomic and environmental dimensions, such as an increasing concentration of people and assets in hazard growing areas,³² declining ecosystem services, and vulnerable rural livelihoods as well as urban and local governance. The multifactor nature of this issue poses a challenge in building bridges between stakeholders from different disciplines when trying to integrate efforts. There is a need to integrate people working on, inter alia, adaptation, disaster, crisis and environmental management, as well as development, not only for technical cohesion but also for building the environment in which their efforts can be enhanced in a coherent manner. Addressing the issue of loss and damage presents opportunities for synergy and for capitalizing on the wealth of data/information and resources that are available, as well as the assessment experiences that have been developed nationally and regionally.

³² According to the representative of the secretariat of the United Nations International Strategy for Disaster Reduction (UNISDR), the population living in areas exposed to tropical cyclones has been growing at twice the rate of the global population.