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Review of issues pertinent to the subsidiary structure of the Commission, including the work of the regional institutions: disaster risk reduction and management

Building resilience to disasters: protecting the gains from sustainable development

Note by the secretariat**

Summary

Over the last 45 years, natural disasters in Asia and the Pacific affected 6 billion people, killing 2 million and inflicting economic losses of $1.15 trillion. As the most disaster-prone region in the world, building resilience to disasters is a high development priority for Asia and the Pacific.

The Sendai Framework for Disaster Risk Reduction 2015-2030, which was adopted on 18 March 2015 at Sendai, Japan, reaffirmed that disaster risk reduction is key to protecting sustainable development gains. The Sendai Framework clearly recognizes the critical role of regional organizations in fostering regional solutions to disaster risk reduction. These include: developing regional strategies and mechanisms; sharing experiences and knowledge and mutual learning opportunities; harnessing regional cooperation for sharing science, technology and innovation; and using regional platforms for increasing coherence across systems, sectors and organizations. It is in this context that the ESCAP secretariat recognizes disaster risk reduction as one of its priorities, and is committed to intensifying its work in this area as an integral part of its mandate towards achieving sustainable development.

The present document identifies regional priorities in disaster risk reduction and highlights the work of the secretariat in delivering on those priorities. It focuses on mainstreaming disaster risk management, monitoring resilience, promoting regional multi-hazard early warning systems, and facilitating regional cooperation in the application of innovative technologies. The Commission may wish to provide guidance on how the secretariat can deepen its work in disaster risk reduction.

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** This document was submitted past the editorial deadline owing to the need to take into account the outcomes of the Third United Nations World Conference on Disaster Risk Reduction, which was held in Sendai, Japan from 14 to 18 March 2015.

Contents

I. Introduction

1. The newly adopted Sendai Framework for Disaster Risk Reduction 2015-2030 reaffirms the important role of regional organizations and platforms in delivering on the four priority areas for action: (a) understanding disaster risk; (b) strengthening disaster risk governance to manage disaster risk; (c) investing in disaster risk reduction for resilience; and (d) enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction.[1] The Sendai Framework identifies specific roles at regional and global levels that complement roles at local and national levels. Regional cooperation is recognized as crucial in supporting member States to reduce disaster risks, build resilience, and ultimately protect lives and livelihoods. It is within this context, and given that Asia and the Pacific is the world's most disaster-prone region, that the Economic and Social Commission for Asia and Pacific (ESCAP) secretariat recognizes disaster risk reduction as one of its priorities and is committed to intensifying its work in disaster risk reduction as an integral part of achieving sustainable development.

2. Natural disasters continue to threaten the sustainable development of Asia and the Pacific:

(a) The region recorded more than 5,000 natural disasters over the last 45 years, which accounted for about 43 per cent of the global total. This affected six billion people, inflicted more than two million fatalities, and cost $1.15 trillion (in constant 2005 United States dollars) in economic losses;[2]

[1] Sendai Framework for Disaster Risk Reduction 2015-2030. A/CONF.224/CRP.1. Available from www.wcdrr.org/uploads/Sendai_Framework_for_Disaster_Risk_Reduction_2015-2030.pdf.

[2] ESCAP, "Overview of Natural Disasters and their Impact in Asia and the Pacific, 1970-2014", ESCAP Technical Paper, March 2015. Available from www.unescap.org/sites/default/files/Technical%20paper-Overview%20of%20natural%20hazards%20and%20their%20impacts_final.pdf.

(b) Floods, storms, earthquakes and tsunamis were responsible for more than 90 cent of both lives lost and economic losses from natural disasters in the region.[3] Earthquakes and tsunamis were the main cause of deaths, even though they occur infrequently. Floods and droughts have affected the largest number of people over the last 45 years — approximately five billion;

(c) South and South-West Asia witnessed the largest number of natural disaster events and lives lost in the region, but close to 70 per cent of the regional economic losses from natural disasters were in East and North-East Asia. Floods have been the costliest natural disaster in South-East Asia, South and South-West Asia and North and Central Asia. The impacts of earthquakes and tsunamis were extremely significant in East Asia, North-East Asia and the Pacific;

(d) Least developed countries and small island developing States are more vulnerable to the impacts of natural disasters. Between 1970 and 2013, the total economic losses from disasters that occurred in 12 least developed countries in Asia and the Pacific amounted to $26 billion.[4] ESCAP research shows that disasters can have long-term consequences on economic growth, especially for least developed countries and small island developing States;

(e) In 2014, even though there were no extreme catastrophes, 119 disaster events were recorded in Asia and the Pacific, resulting in 6,050 fatalities and about $60 billion (in current United States dollars) in economic losses. Close to 80 million people were affected by natural disasters.[5] Throughout the year, there was a large number of storms, transboundary floods and landslides.

3. Rapid population growth and urbanization coupled with rapid economic growth in the region has exacerbated population and asset exposure to disasters. Over the past 45 years, the region's population almost doubled from 2.2 billion in 1970 to 4.3 billion in 2014. Close to half of the region's population now lives in cities — a dramatic increase from the 25.9 per cent recorded in 1970.[6] This rapid population growth and urbanization has often taken place at the expense of disaster resilience, especially for the most vulnerable populations. Vulnerable people often settle in hazardous lands, such as on earthquake fault lines and in low flood plains, as these areas are either the most affordable location or the only sights available in cities that are already densely populated. Over time, this has increased the most vulnerable population's exposure to disasters.

II. From Hyogo to Sendai: emerging priorities and challenges

4. Coinciding with the Hyogo Framework for Action, the Asia and the Pacific region has made mixed progress over the last 10 years in disaster risk reduction.[7] Weak translation of policies and legislation into action has been identified as a major impediment. While countries have developed legal and

[3] Ibid.

[4] ESCAP calculation based on data from EM-DAT (accessed in February 2015).

[5] ESCAP, "Disasters in Asia and the Pacific: 2014 year in review". Available from www.unescap.org/resources/disasters-asia-and-pacific-2014-year-review-0.

[6] ESCAP Online Statistical Database.

[7] United Nations Office for Disaster Risk Reduction, "The Hyogo Framework for Action in Asia and the Pacific 2011-2013". Available from www.unisdr.org/files/32851_hfaregionalsynthesisreportasiapacif.pdf.

institutional mechanisms for disaster risk reduction, the majority have failed to integrate them into development policies, planning, programmes and projects. Budgetary allocations for disaster risk reduction have increased, but the higher allocation has been limited to a few countries. Institutional capacities for early warning, preparedness and response have been strengthened, but there is still significant room for improvement. Many countries cited a "lack of capacity" as one of the main challenges impeding the implementation of Hyogo Framework of Action.

5. The Sendai Framework for Disaster Risk Reduction 2015-2030, which was adopted at the Third United Nations World Conference on Disaster Risk Reduction on 18 March 2015, emphasizes the urgent need to address the unfinished business of the Hyogo Framework of Action. The expected outcome is to realize a substantial reduction in disaster risk and disaster losses (in lives, livelihoods, health and assets). It identifies seven targets, which relate to the following: reducing disaster mortality and the number of people affected; reducing direct disaster economic losses and damage to critical infrastructure and disruption of basic services; increasing the number of countries with national and local disaster risk reduction strategies; enhancing international cooperation; and increasing access to multi-hazard early warning systems and disaster risk information and assessments. Four priorities for action are identified in pursuing the expected outcome and targets: (a) understanding disaster risk; (b) strengthening disaster risk governance to manage disaster risk; (c) investing in disaster risk reduction for resilience; and (d) enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction.

6. The Sendai Framework clearly recognizes the critical role of regional organizations in fostering regional solutions to disaster risk reduction. These include developing regional strategies, guidance and mechanisms in disaster risk reduction; sharing experiences, knowledge and mutual learning opportunities; harnessing regional cooperation for sharing science, technology and knowhow; and using regional platforms to increase coherence across systems, sectors and organizations (see the table).

Table
Regional actions for implementing the Sendai Framework

Priorities for action	Selected regional level actions
(a) Understanding disaster risk	• Utilize the latest innovations in science, technology and media to enhance: risk information and modelling; disaster loss statistics; and early warning systems • Develop and disseminate regional maps on multi-hazard climate and disaster risks • Promote regional and international technology transfer

Priorities for action	Selected regional level actions
(b) Strengthening risk governance	• Develop regional strategies and mechanisms for cooperation to address common and transboundary risks • Promote coherence of disaster risk reduction across all sectors within sustainable development goals • Use regional platforms for policymaking, sectoral integration and partnerships and provide a strong link to subregional and global platforms • Encourage, among other things, information exchange, mutual learning and peer reviews • Promote shared risk monitoring and assessment
(c) Investing in disaster risk reduction for resilience	• Promote coherence across systems, sectors and organizations • Develop and promote mechanisms for risk sharing and risk transfer • Develop products and services to address the specific needs of developing countries • Support coordination of global and regional financial institutions • Strengthen critical sectors, including health and agriculture, while enhancing social safety nets • Broaden poverty reduction through disaster risk reduction • Promote public-private partnerships
(d) Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction	• Develop and strengthen coordinated approaches and an operational mechanism for response preparedness • Develop and disseminate policies and instruments and facilitate information sharing and best practices for post-disaster recovery • Promote development and investment in regional multi-hazard early warning systems • Promote regional cooperation to strengthen approaches, mechanisms and protocols to enhance preparedness, including training and drills • Support focused efforts on hydrometeorological issues and water-related disaster risks • Establish regional sharing mechanisms for recovery

III. Resilience to disasters in the context of sustainable development

7. Successful implementation of the Sendai Framework depends heavily on broader recognition at all levels of government that disaster risk reduction is key to protecting the hard-earned gains in sustainable development. In order for that to happen, disasters need to be considered a development issue. As is the case of many development issues, disaster risk reduction must be integrated into national development plans, strategies and fiscal budgets (see box 1). The United Nations Conference on Sustainable Development in its outcome document entitled "The Future We Want" appropriately called for disaster risk reduction and the building of resilience to disasters to be addressed, with a renewed sense of urgency, in the context of sustainable development and poverty eradication, and, as appropriate, to be integrated into policies, plans, programmes and budgets at all levels. It further called for more coordinated and comprehensive strategies that integrate disaster risk reduction and climate change adaptation into public and private investment, decision-making and planning.[8]

Box 1
Sendai takeaways

1. **Reaffirming disaster risk reduction as a priority.** Resilience is key to protecting sustainable development gains.
2. **Considering disasters as a development issue.** Call for mainstreaming disaster risk reduction into development planning and financing.
3. **Underlining the need for regional solutions.** Disasters know no borders and impacts are increasingly transboundary in nature. Regional cooperation is critical, in particular for multi-hazard monitoring, early warning systems and sharing science and technology.
4. **Stressing the need for coherence.** To make full use of regional commissions' interdisciplinary, intergovernmental platforms to take disaster risk reduction to all sectors and levels of governments. Regional platforms to ensure that disaster risk reduction is integrated into formal United Nations policy mechanisms.

8. The objective of the inaugural session of the Asia-Pacific Forum on Sustainable Development, which was held in Bangkok from 19 to 21 May 2014, was to consolidate a regional voice on sustainable development goals. The Forum adopted disaster risk reduction as one of seven sustainable development priorities for Asia and the Pacific. It agreed that building resilience to natural disasters is an urgent regional priority in order to avoid the reversal of development gains. This message from the region was relayed by the secretariat to the preparatory process of the Third United Nations World Conference on Disaster Risk Reduction.

9. At the subregional level, Pacific small island developing States have been champions of integrating disaster risk reduction and climate change adaptation, including through the Roadmap Towards a Post 2015 Integrated Regional Strategy for Disaster Risk Management and Climate Change in the Pacific. Furthermore, the SIDS Accelerated Modalities of Action (SAMOA) Pathway identifies disaster risk reduction as an area of priority towards

[8] A/RES/66/288.

sustainable development.[9] Out of the eight "priority areas for action" in the Istanbul Programme of Action, the sixth priority focuses on multiple crises and emerging challenges, which includes disaster risk reduction. ESCAP research clearly establishes that small island developing States, least developed countries and landlocked developing countries are the most vulnerable to natural disasters and other shocks.[10] The findings of the ESCAP theme study served as the basis for the ministerial round-table discussion at the sixty-ninth session of the Commission that met on the theme of building resilience to natural disasters and major economic crises, which was followed up by the adoption of a resolution to enhance regional cooperation towards building resilience and creating a regional voice for the post-2015 disaster risk reduction framework.

10. Countries across Asia and the Pacific have echoed the need to build disaster resilience in order to achieve sustainable development at various forums. The Commission through resolutions 68/5, 69/11, 69/12, 70/2 and 70/13 have underscored the role of the secretariat in enhancing evidence-based policymaking for disaster risk reduction and building the capacity of member States to effectively address disasters, promoting regional knowledge-sharing, and strengthening regional cooperation, especially through the application of space technologies and geographic information systems.

IV. Regional priorities for building resilience to disasters

11. As outlined above, the responsibilities and actions at the regional level are clearly outlined in the Sendai Framework; they are being formulated in the context of the development agenda beyond 2015. In that regard, the regional commissions have a special role as they have the ability to take the disaster risk agenda to the broader development milieu by promoting a multi-sectoral and multi-disciplinary approach to disaster risk reduction. Moreover, regional commissions play an integral role as the formal United Nations platform in regional policymaking: as the facilitator of disaster risk reduction from its current, narrow sectoral focus into the mainstream multi-sectoral development frameworks; as the facilitator of regional knowledge and experience sharing; and as a catalyst in creating a strong regional voice. Representing the region that is not only the most prone to disasters but also increasingly experiencing disasters that have cross-border impacts, ESCAP has a crucial role in building regional and South-South cooperation for addressing shared risks.

12. The secretariat delivers its mandate through a combination of normative, analytical and capacity-building work. This work is well anchored in regional cooperation mechanisms. Since the seventieth session of the Commission, the focus has been on the following: providing multisectoral, multidisciplinary policy guidance for mainstreaming disaster risk management; developing a core set of statistics for monitoring resilience; promoting end-to-end regional early warning systems; building capacity for disaster risk reduction, especially through space technology applications and geographic information systems; and deepening regional cooperation for knowledge- and technology-sharing among member States. The following section contains a set of regional priorities in disaster risk reduction and the highlights of the work of the secretariat in delivering on those priorities.

[9] A/CONF.223/10.

[10] ESCAP, *Building Resilience to Natural Disasters and Major Economic Crises* (United Nations publication, Sales No.E13.II.F.3).

A. Mainstreaming disaster risk reduction

13. Managing disaster risk is not merely managing a disaster event; it is a comprehensive approach that entails assessing disaster risk, reducing disaster risk to the extent possible within the available resources, preparing for residual risks that cannot be prevented and responding to disasters with comprehensive plans for relief, early recovery and long-term reconstruction. These activities connect disaster risk reduction and management deeply with sustainable development. This nexus of disasters and sustainable development has three different dimensions: disasters erode development gains, which, in turn, makes disaster risk reduction essential for protecting gains in development; deficits in development creates higher disaster risk, and therefore development is key to reducing the vulnerabilities to disasters; and unplanned and unsustainable development creates new disaster risk. Therefore, disaster risk reduction must be integrated into the development process.

14. Mainstreaming disaster risk reduction thus requires a multi-disciplinary, multi-sectoral approach that involves finance and planning ministries, relevant sectoral ministries and all levels of government. To be effective, disaster risk should be integrated into development plans, poverty reduction strategies and climate change adaptation frameworks. It should also be reflected in national budgets and long-term investment plans. Mainstreaming at the operational level entails looking critically at programmes and project activities that are planned across all sectors of development, not only for reducing existing vulnerabilities but also for ensuring that no new disaster risk is created in the development process.

15. Effective mainstreaming requires an overarching structure that includes a policy framework, legal-institutional framework, strategic framework and operational framework. First, the national development plan (or its equivalent) can lay down a complete blueprint for disaster risk reduction during the planning period, building on the achievements and experiences of the past, and setting targets for the future. Second, based on this blueprint, the national disaster management authorities may, in consultation with the relevant sectoral ministries/agencies, develop a set of broad principles for mainstreaming across all sectors. The operational framework on mainstreaming across different sectors of development could be developed by the respective ministry/agency in charge of each sector, in consultation with the national disaster management authority.

16. Through its analytical work, regional advisory services and capacity-building activities, ESCAP promotes a multi-disciplinary approach for mainstreaming disaster risk reduction into multi-sectoral policy planning. As part of this work, it has brought together high-risk, low-capacity countries in Asia and the Pacific to share the region's good practices on mainstreaming disaster risk reduction into development planning, with a specific focus on key sectors of development. Ministries of planning, finance, home affairs, transport and infrastructure, disaster management authorities and other relevant ministries/agencies of 16 countries have initiated a medium-term capacity-building programme, which will benefit from specific guidelines and toolkits that the secretariat is developing to enhance coordination between ministries in formulating policies and strategies for more effective mainstreaming.

17. The secretariat is working towards developing prototype *ex ante* probabilistic risk assessment modelling solutions, as well as *ex post* rapid assessment tools using innovative technologies to support a post-disaster "Build Back Better" approach. Capacity-building of senior officials in

mainstreaming disaster risk reduction will be supported by the regional training network established in partnership with the National Disaster Risk Reduction Centre of China and the National Institute of Disaster Management of India through South-South cooperation modalities.

18. Since the seventieth session of the Commission, the secretariat has also provided regional advisory services on request to eight countries. In addition, there has been a wide range of requests for advisory services, spanning from a comprehensive policy review and development of disaster management plans, integration of disaster contingency planning, development of national guides on post-disaster needs assessment, to assessing information management gaps and integrating disaster risk reduction and climate change frameworks. Regional advisory services have also been provided for the development of a framework of action in the area of disaster risk reduction in Central Asia and in the South Caucasus subregion.

19. The secretariat's work also focuses on engaging the private sector in disaster risk management. The secretariat's joint publication with partners, *Resilient Business for Resilient Nations and Communities* highlights the joint responsibility of public and private sectors in promoting and structuring risk-sensitive investments.[11] ESCAP is bringing together key stakeholders from the public and private sectors through its Asia-Pacific Business Forum to begin a structured dialogue on taking this agenda forward. Among the early results of this work is the recent reorientation of the Task Force on Inclusive and Sustainable Trade and Investment of the ESCAP Business Advisory Council to include a specific task force on disaster risk reduction.

B. Monitoring resilience

20. While natural disasters have adversely affected economic growth and social development gains in the Asia-Pacific region, even basic statistics related to disasters, such as disaster occurrences by type and the number of people affected are not collected and reported based on standardized definitions and methodologies across the region. The evidence-based policymaking for disaster risk reduction remains challenging for the majority of the countries in the region. In that regard, the Commission in its resolution 69/12 invited members and associate members of ESCAP to improve the quality and availability of disaggregated data related to disasters, to enable a more comprehensive assessment of the socio-economic effects of disasters.

21. Compiling, maintaining and updating disaster data has been challenging in the region, particularly in developing countries, owing to: the lack of robust baseline information; the complex circumstances associated with disasters; and the lack of clear standards and definitions. The absence of agreed statistical standards also impedes the consistency and interoperability of disaster statistics among countries, thus hindering regional analysis and cooperation.

22. Improvement in disaster-related statistics is essential for providing the basis for more evidence-based disaster risk management. Member States through Commission resolution 70/2 decided to establish an expert group comprised of statisticians and disaster risk reduction experts to develop a basic range of disaster-related statistics, which will be reported to the Commission at its seventy-second session, in 2016. Also in the resolution, the Commission invited members and associate members to build and assess

[11] Asian Disaster Preparedness Center, ESCAP, and R3ADY Asia-Pacific, *Resilient Business for Resilient Nations and Communities*, (Bangkok, 2015). Available from www.unescap.org/resources/resilient-business-resilient-nations-and-communities.

their capacity to deal with disasters through, among other measures, the improvement of disaster-related statistics.

23. The ESCAP Expert Group on Disaster-related Statistics in Asia and the Pacific, which consists of technical advisors and regional and international experts, was established in October 2014. The first meeting discussed strategic departure points for the development of a basic range of disaster-related statistics. Key characteristics of disaster occurrences were identified, and will be complemented by country practices on disaster definitions, disaster classifications, data collection and data reporting.

24. The second meeting of the Expert Group was organized on 17 March 2015 as a side-event to the Third United Nations World Conference on Disaster Risk Reduction in order to raise awareness among global leaders of the Asia-Pacific regional efforts to establish a basic range of disaster-related statistics. At the side event, the first draft of the proposed basic range of disaster-related statistics was reviewed. Underpinning the effort outlined above is recognition that close cooperation between national statistical offices and national disaster management authorities is necessary in order to establish a standardized basic range of disaster-related statistics in Asia and the Pacific.

25. The regional advisory services played an important role in ensuring that the work of the Expert Group is aligned with other global and regional initiatives. This sustained engagement has helped to strategically position the work of ESCAP in various forums such as the Technical Advisory Group of the Centre for Research on the Epidemiology of Disasters, which has been maintaining an Emergency Events Database EM-DAT; the Informal Working Group on Targets and Indicators of the Preparatory Committee of the Third United Nations Conference on Disaster Risk Reduction for the post-2015 framework for disaster risk reduction; and the Overseas Development Institute initiative in measuring resilience.

C. Promoting regional multi-hazard early warning systems

26. Multi-hazard early warning is an essential component of effective strategies to reduce disaster risk and build resilience, and is recognized as one of the seven targets of the Sendai Framework. As a convener of regional cooperation, ESCAP is uniquely positioned to promote progress in this area, including through the ESCAP Multi-Donor Trust Fund for Tsunami, Disaster and Climate Preparedness in Indian Ocean and Southeast Asian Countries.

27. Regional, South-South and triangular cooperation on early warning can be highly effective, as natural hazards often threaten multiple countries in Asia and the Pacific simultaneously. Furthermore, there are significant economies of scale involved in developing collective systems. It has been estimated that the Indian Ocean Tsunami Warning and Mitigation System, which became operational in 2011 with support from the Trust Fund, will save, on average, at least 1,000 lives per year over the next 100 years.[12] Meanwhile, research shows that investments in early warning in developing countries have a cost-benefit ratio of between 4 and 36, making them sound from an economic standpoint.[13] Early warning is thus an area that requires

[12] Thomas J. Teisberg, "Potential life saving benefits of a tsunami early warning system in the Indian Ocean", paper submitted to ESCAP, 2011.

[13] Stéphane Hallegatte, "A cost effective solution to reduce disaster losses in developing countries: hydro-meteorological services, early warning, and evacuation", Policy Research Working Paper, No. 6058 (World Bank, May 2012). Available from http://elibrary.worldbank.org/doi/abs/10.1596/1813-9450-6058#.

long-term investment based on a regional approach, as championed by ESCAP and its partners.

28. Over the past 10 years, good progress has been made in strengthening early warning systems in Asia and the Pacific. In particular, there has been rapid expansion of observation networks for tsunami risk. When the Indian Ocean Tsunami struck in 2004, only 13 broadband seismometers and four coastal sea level gauges sharing data in near real-time for warning purposes were in place. Currently, there are more than 140 broadband seismometers and more than 100 sea level gauges all sharing data through the Indian Ocean Tsunami Warning and Mitigation System.

29. Despite progress, significant gaps and unmet needs remain. Several countries in the region lack capacity in conducting multi-hazard risk and vulnerability assessments, while others need support in developing standard operating procedures for multiple hazards, and testing them through joint drills and exercise that include the most vulnerable communities at risk. A common challenge is also to incorporate early warning tools and products into decision-making processes and thus promote early action.

30. In Asia and the Pacific, there is great need to make early warning systems more "people-centered" and improve people's access to warning information, as recognized in the Sendai Framework (box 2). This involves strengthening communication and dissemination of warnings, and building response capacity at the local level, which is often referred to as the "last mile" of warning systems. While many countries have vastly improved their systems for monitoring and observing hazards since 2004, recent disasters show that the improved risk information does not necessarily trigger the desired life-saving actions among the most vulnerable population. As a result, more investment is needed to ensure that warning systems are "end-to-end" and that populations at risk receive timely warnings that they are able to understand and know how to act upon in a time of crisis.

Box 2

Third United Nations World Conference on Disaster Risk Reduction, Sendai, Japan

Working Session on Early Warning, 14 March 2015

The discussions in the Working Session on Early Warning highlighted the importance of a holistic and integrated approach to multi-hazard early warning, as a key component of disaster risk reduction and climate change adaptation. Early warning should be considered as a "public good", which:

- is underpinned by legal and regulatory frameworks and long-term political commitment;
- ensures financial sustainability and promotes interoperability and harmonization of early warning systems;
- incorporates risk and impact information and applies recent advances in information and communications technologies and earth observations;
- ensures a single recognized authoritative voice when issuing warnings so that they are trusted and acted upon by those at risk;
- ensures that warnings and advisories are tailored to specific user needs with gender perspectives.

To this end, the session recommended the pursuit of international and regional cooperation through the new Multi-Stakeholder Partnership for Promoting and Sharing Best Practice in Multi-Hazard Early Warning Systems and Services for Disaster Risk Reduction and Resilience, of which ESCAP is a founding member. During the sessions, support of the new partnership was expressed by delegates representing China, France, Germany, and India.

Trust Fund for Tsunami, Disaster and Climate Preparedness — continuing to serve unmet demands

31. The Trust Fund was established in 2005 in the aftermath of the devastation wrought by the Indian Ocean Tsunami in December 2004 with generous founding contributions from the Governments of Thailand and Sweden. Since its inception, the Trust Fund has been playing a key role in strengthening end-to-end early warning systems, especially for coastal hazards, by promoting regional, multi-hazard approaches.

32. Between 2005 and March 2015, the Trust Fund received contributions totaling $14.1 million from the Governments of Thailand ($10 million), Sweden, Germany,[14] Turkey, Japan, the Philippines, Bangladesh and Nepal, with an additional $1 million committed by the Government of India. It has supported several innovative projects to enhance regional cooperation, with a specific focus on addressing the operational needs in risk assessment and early warning of high-risk, low-capacity countries. Since 2005, the Trust Fund has approved 26 projects, directly benefitting 19 countries. As of March 2015, nine projects were still being implemented.

33. The Trust Fund was one of the contributors to the Indian Ocean Tsunami Warning and Mitigation System, in particular through support for the adaptation of regional and national standard operating procedures for tsunami warning and response. It also made a major contribution to the establishment of the Regional Integrated Multi-hazard Early Warning System for Africa and Asia, an intergovernmental institution that provides tsunami watch services and assists countries in applying hydrometeorological risk information for decision-making. The System's products and services, which have proven particularly useful for countries with limited domestic capacity, include tsunami forecasting, risk assessment, evacuation mapping, seasonal outlooks and monitoring and forecasting of severe weather.

34. Going forward, the Trust Fund's strategy is to support the further strengthening of regional mechanisms, such as the Indian Ocean Tsunami Warning and Mitigation System, the Regional Integrated Multi-hazard Early Warning System for Africa and Asia, the ESCAP/WMO Typhoon Committee and the WMO/ESCAP Panel on Tropical Cyclones. In addition, in line with the priorities of the Sendai Framework, the Trust Fund will prioritize specific needs of countries at high risk of disasters, with a particular emphasis on ensuring that the most vulnerable people at the "last mile" receive timely and relevant warning information. To address the significant unmet needs in early warning, ESCAP is encouraging new contributions from governments and donors to the Trust Fund to further strengthen regional cooperation to assist under-served high-risk, low-capacity countries.

Facilitating cooperation among regional platforms

35. To further enhance regional cooperation in addressing the risk of hydrometeorological disasters, ESCAP has actively supported bringing together the ESCAP/WMO Typhoon Committee and WMO/ESCAP Panel on Tropical Cyclones. These intergovernmental platforms were established under the auspices of ESCAP and the World Meteorological Organization to promote and coordinate the planning and implementation of measures required for minimizing fatalities and damage caused by typhoons and tropical cyclones.

[14] The contributions from the Government of Germany were provided through the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH.

36. To this end, ESCAP hosted the Third Joint Session of the Panel on Tropical Cyclones and the Typhoon Committee, which was held in Bangkok from 9 to 13 February 2015. The convening of this event entailed close cooperation between these two important intergovernmental platforms — the Typhoon Committee and the Panel on Tropical Cyclones. It was the first joint session involving those platforms in 18 years. Over the previous two decades, these two platforms had acquired a great deal of knowledge, expertise and technological advancement. Recognizing the need to develop a coordinated framework to share the knowledge and experiences, at the joint session, it was agreed to establish a cooperative arrangement between the two platforms, with a set of agreed priorities for implementation. This arrangement will enable the sharing of second-generation meteorological satellite data and products and advanced modelling skills for improved forecasting and early warning. It will also facilitate joint initiatives to enhance the capacities of member States and a capacity development network with support from the Regional Specialized Meteorological Centres in India and Japan and the Regional Training Centre in China.

D. Fostering regional cooperation for the application of innovative technologies

37. The transformational shift towards sustainable development must be based on sound science, technology and innovation, which is instrumental in developing a thorough understanding of key global challenges, their complexities and their interrelationships. In this context, science, technology and innovation has been identified as a critical means of implementation for the sustainable development agenda. At all levels, it plays an integral role in addressing the priorities for action under the Sendai Framework.

38. In the Sendai Framework, the role of space-derived information and geographic information system applications in enhancing measurement tools and supporting the collection, analysis and dissemination of data has been recognized. The Sendai Framework places high importance on promoting and enhancing access to non-sensitive data and geospatial and space-based technologies and related services through international cooperation. Maintaining and strengthening in situ and remote-sensed earth and climate observations is also recommended.

39. Space technology applications and geographic information systems are critical components of science, technology and innovation and are regularly used in managing disaster risks. Earth observation, satellite telecommunication, satellite meteorology and global navigation satellite systems have already played important roles in disaster risk management, while space-derived and geospatial data are extremely useful during times of emergency response and reconstruction. Remote sensing, geographic information systems and allied disciplines can also be applied in many areas beyond disaster management to address issues critical to sustainable development, such as agricultural monitoring, environmental management and urban planning.

40. Developing countries in Asia and the Pacific have made progress in the effective utilization of innovative technologies, particularly space technology and geographic information system applications. However, there are still considerable gaps in integrating space-derived information into disaster risk reduction and management policies, including implementation strategies. National spatial data infrastructure, data policies and data-sharing arrangements are lacking, particularly for high-risk, low-capacity countries. Greater access to data would enable wider availability and use of space-

derived information and products in a timely and affordable manner for preparedness, early warning and disaster response. Though there are some success stories, for many countries, coordination across relevant government agencies needs to be strengthened, with open dialogue promoted in order to reduce the information gaps, system incompatibilities and duplication.

41. In addition, more institutional capacity-building across various sectors is needed to allow different sectoral ministries and agencies to recognize the benefits of space-derived information and products, and to create a critical mass of experts with the ability to utilize this data for various sectoral purposes. The sharing of good practices at the national, subregional and regional levels in order to learn from other perspectives and remain abreast of new innovations is an important part of this capacity-building process.

42. To address these challenges at the regional level, the Regional Space Applications Programme for Sustainable Development, a long-standing ESCAP programme, has continued to foster cooperative efforts. Key priority areas for action are outlined by the Commission in its resolution 69/11 on the implementation of the Asia-Pacific Plan of Action for Applications of Space Technology and Geographic Information Systems for Disaster Risk Reduction and Sustainable Development, 2012-2017. ESCAP has been tasked by member States to lead the implementation of that resolution at the regional level.

43. For this purpose, ESCAP is focusing on three areas of programming to support member States in effective use of space technology and geographic information system applications for addressing disaster risk management: (a) mobilizing regional resources on space-derived data and products to support countries during disaster response; (b) operationalizing regional programmes and projects; and (c) providing technical assistance and institutional capacity development in utilizing space and geographic information system applications.

44. In mobilizing regional resources to support countries during disaster response, ESCAP continues to call on its member States though the Regional Space Applications Programme for Sustainable Development network to provide technical assistance and near real-time satellite imagery and other satellite-derived products and services to disaster-affected countries. Under the Programme, ESCAP member States have benefited from pooling resources on space technology capabilities to support each other during times of crisis and emergency. Furthermore, ESCAP fosters partnerships with other United Nations agencies and maintains international cooperation channels to provide further support to its member States and fill gaps in coordination, response and damage assessment. To improve the information provided to Governments, ESCAP is also working with the South Asian Association for Regional Cooperation to develop a manual on rapid assessment of disaster damage and loss by making use of advances in space applications, geospatial modelling, navigation systems and crowd sourcing. The manual will include a step-by-step guide on conducting rapid damage assessments for specific sectors to finance recovery and reconstruction in a more timely and transparent manner.

45. In operationalizing regional programmes and projects to benefit countries through long-term sustainable development, ESCAP aims to further develop and implement innovative and emerging space applications and geographic information system prototype projects across the region. One such operational programme is the Regional Drought Mechanism, which is a flagship programme under the Regional Space Applications Programme for

Sustainable Development. The Drought Mechanism provides institutional capacity-building to countries on how to effectively utilize space-derived data and products to monitor potential drought conditions in-season and establish an early warning system for better preparedness. The Mechanism is currently supported by two regional service nodes, located in in China and India, and is working towards establishing broader partnerships. Presently, seven countries have requested to be pilots under the Mechanism: Afghanistan, Cambodia, Kyrgyzstan, Mongolia, Myanmar, Nepal, and Sri Lanka.

46. ESCAP continues to provide technical assistance and institutional capacity development in utilizing space technology and geographic information system applications based on country requests for specific technical support. For example, it is supporting member countries of the Association of Southeast Asian Nations (ASEAN) by developing standard operating procedures for acquisitioning and sharing space-based information. Considerable support was also extended to member States in operationalizing GeoDRM portals, which aim to ensure that the right information is available to the right people at the right time. ESCAP plans to further help build institutional capacity in those areas by providing knowledge and training materials via a new e-learning platform, which is currently being developed. In addition, it provides ongoing information and knowledge exchange through its advocacy materials, which consists of operational guidelines, policy briefs, an e-learning platform on GeoDRM and other knowledge products. Since the seventieth session of the Commission, capacity-building activities in utilizing GeoDRM portals, drought monitoring and management and other uses of space applications for disaster risk management have benefited 31 countries and about 300 experts, practitioners and government officials. In addition through its regional advisory services, ESCAP supports the technical assistance programme regularly.

47. Furthermore, the secretariat is deepening partnerships and strengthening regional platforms, such as the Regional Space Applications Programme for Sustainable Development, to enable better access to, and capacity for using, space-based products and services for hazard zoning and risk assessment, flood monitoring and early warning, emergency communications, impact mapping and damage assessment. Plans are under way to engage in hazard mapping for urban resilience and crop monitoring, and to increase the use of satellite-derived information for land use management and post-disaster recovery.

48. Various institutions and member States can support efforts to increase the access and utilization of innovative technologies and applications through regional cooperation, including through networking and harmonization of relevant initiatives and fostering synergies to reduce duplication. Greater information exchange and support through stronger regional cooperation would greatly benefit developing countries in the region.

V. Taking the disaster risk reduction agenda forward

49. As outlined above, the secretariat will continue to deliver its mandate on disaster risk reduction through a combination of normative, analytical and capacity-building work. This work will continue to be firmly anchored in regional cooperation mechanisms. By aligning its work with the Sendai Framework and the development agenda beyond 2015, the secretariat will further endeavor to deepen its assistance to member States in the following areas:

(a) Produce policy analysis and provide technical advisory services aimed at identifying and disseminating solution-oriented services and products for promoting closer policy links in the following areas: disaster risk reduction; poverty reduction; risk financing; public-private partnerships; climate change adaptation; and sustainable development;

(b) Develop a core set of regionally agreed disaster-related statistics as underscored in resolution 70/2 and strengthen the capacity of member States in reporting disaster-related statistics and developing evidence-based disaster risk reduction policy;

(c) Facilitate the sharing of multi-hazard and transboundary risk information, risk modelling and monitoring, including the provision of near real-time satellite data and products for post-disaster damages and impacts, and access to institutional capacity development opportunities through coordination and partnerships;

(d) Enhance regional cooperation for risk assessment and multi-hazard "end-to-end" early warning systems with specific focus on high-risk and low-capacity countries, especially building on the projects delivered by the Trust Fund for Tsunami, Disaster and Climate Preparedness, and through space and geographic information system application programmes;

(e) Promote regional coherence across systems, sectors, and organizations through the establishment of a formal link between the United Nations Office for Disaster Risk Reduction (UNISDR) regional platform and the regional commission; deliver the work output of the Committee on Disaster Risk Reduction as a One UN effort; and establish closer relations with subregional organizations through the Regional Coordination Mechanism and its Thematic Working Group on Environment and Disaster Risk Management.

VI. Issues for consideration by the Commission

50. Member States may wish to share their experiences and views on the emerging issues and challenges raised. The Commission may also wish to encourage countries to integrate disaster risk reduction measures into their socioeconomic development process, and enhance regional cooperation for building resilience to natural disasters, especially through the regional platform offered by ESCAP.

51. The Commission may wish to provide the secretariat with guidance on strategies and approaches for achieving disaster risk management and resilience targets as highlighted above and identify priorities considered appropriate for the secretariat to follow in its future work, taking into account the regional implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 and the forthcoming sustainable development goals of the development agenda beyond 2015.