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**Mainstreaming disaster risk reduction into
 development strategies**
**Building resilience to disasters: mainstreaming disaster
 risk reduction into development strategies**
Note by the secretariat*Summary*

The present document provides an overview of issues facing member States in the light of more frequent and serious natural disasters affecting Asia and the Pacific. These extreme events have devastating consequences on development. They also highlight the interlinkage among economic, social and environmental factors in the development process, and thus result in the need to apply comprehensive solutions into development strategies. The present document contains a review of the benefits and costs of mainstreaming disaster risk reduction into the broader framework of multisectoral socioeconomic development and presents strategic approaches for building resilience into the economy, critical sectors and supply chains, and ecosystems, as well as into communities.

The Committee is invited to discuss the various good practices in mainstreaming disaster risk reduction into a range of sectors for national development planning and budgeting. The Committee may also wish to explore a set of regional principles in order to equip member States with references when undertaking such mainstreaming, as well as to provide the secretariat with guidance on its future strategic direction.

Contents

| | <i>Page</i> |
|---|-------------|
| I. Introduction..... | 2 |
| II. Impacts of natural disasters on inclusive development in Asia and the Pacific..... | 3 |
| III. Investing in disaster risk reduction | 4 |
| IV. Strategic approaches for mainstreaming disaster risk reduction into a development strategy..... | 6 |
| A. Building economic resilience to disasters | 7 |

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| | | |
|------|---|----|
| B. | Investing in resilient critical infrastructure..... | 9 |
| C. | Building community resilience | 9 |
| D. | Protecting essential ecosystems | 10 |
| E. | Data as a prerequisite for mainstreaming..... | 11 |
| V. | Addressing shared risks | 12 |
| A. | Strengthening cross-border resilience to disasters | 12 |
| B. | Building public-private partnerships in disaster risk reduction..... | 14 |
| C. | Building resilient supply chains..... | 14 |
| D. | Strengthening risk monitoring and early warning..... | 15 |
| VI. | Regional cooperation in mainstreaming disaster risk reduction | 15 |
| A. | Enhancing regional knowledge in building resilience | 15 |
| B. | Building regional capacity in mainstreaming disaster risk reduction ... | 16 |
| C. | Outcomes of the fifth Asian Ministerial Conference on Disaster Risk Reduction..... | 18 |
| VII. | Issues for consideration by the Committee | 18 |

I. Introduction

1. The world is facing an unprecedented era characterized by rapid economic growth, urbanization and environmental degradation coupled with an increasing number of extreme weather events. Globally, disasters caused more than 3.3 million deaths and \$2.3 trillion in damage between 1970 and 2010, with direct economic losses of \$100 billion over the last three consecutive years. An approach to investment that does not appropriately take into account disaster risk will greatly increase the potential for losses in the future.¹ One estimate indicated that the world would suffer \$168 billion in losses annually by 2100 from disasters, or up to \$236 billion per year, when factoring in climate change impacts.²

2. In Asia and the Pacific, during the past decade, disasters affected 2.5 million people and resulted in almost 800,000 deaths. As the most disaster-prone region in the world, a person living in Asia and the Pacific is almost twice as likely to be affected by a disaster as a person living in Africa, almost six times more likely as compared to a person living in Latin America and the Caribbean, and 30 times more likely than a person living in North America or Europe. This trend is also reflected in the region's economic losses — in 2011, losses in Asia and the Pacific represented 80 per cent of the global disaster-related losses, even though the region only generated a quarter of the world's gross domestic product (GDP).

3. Rapid and uncontrolled urban expansion with poor land use planning and management and environmental degradation is a major factor contributing to higher disaster risk in the region. This trend is expected to continue, with 55 per cent of Asia expected to be urbanized by 2030.³

¹ United Nations International Strategy on Disaster Risk Reduction, *Global Assessment Report on Disaster Risk Reduction 2013* (Geneva, 2013).

² World Bank, *Disaster Risk Management: Building a Safe and Resilient Future for All* (Washington D.C., 2011).

³ United Nations Department of Economic and Social Affairs, *World Urbanization Prospects: The 2011 Revision* (New York, 2012) pp. 10-12.

4. Disaster risk is being further aggravated by the impacts of climate change, which is predicted to generate more frequent and extreme disasters. Combined with other shocks, such as financial crises, the development agenda of the region is poised to face serious compounding challenges.

5. Building resilience is one of the most important current challenges for Asia and the Pacific. With an ever more complex society having deep interlinkages at the local, national, regional and global levels, many policymakers recognize the need to move away from addressing single issues to treating economic or social sectors holistically.

6. The present document contains a review of the region's trends in disaster risk reduction in the light of multiple shocks, as well as, highlights of key issues related to mainstreaming disaster risk reduction into development planning, proposed strategic approaches for building resilience to disasters and areas for future work for the consideration of the Committee.

II. Impacts of natural disasters on inclusive development in Asia and the Pacific

7. According to *The Asia-Pacific Disaster Report 2012*, the vulnerability and exposure of people and assets to disasters is rising in the countries of Asia and the Pacific. Losses have grown more than 16 times since 1970 in the region, while GDP increased only 13 times.⁴

8. Relative to the size of their economies, the devastation from disasters is more extensive in low-income countries when compared to developed countries. Least developed countries and small island developing States are particularly vulnerable. The estimated damage and loss from Cyclone Nargis in Myanmar was 20 per cent of GDP. Damage from an earthquake and tsunami in Samoa in 2009 amounted to 20 per cent of the country's GDP and hindered its graduation from the least developed country status to that of a middle-income country. In relative terms, Samoa was also the hardest hit country in the world in 2012 as the damage caused by Cyclone Evan represented 19.9 per cent of the country's GDP.⁵

9. As disasters occur and economies falter, social spending is threatened. It is the poor and marginalized, particularly women, children, the elderly and persons with disabilities, who are the most vulnerable and hit hardest by disasters. Thus, every effort must be made to protect development gains that benefit the poorest and most vulnerable.

10. All segments of society are affected by disasters, but the losses are greatest among small-scale business owners and informal sectors, marginal farmers and poor households, as they often lack buffers against sudden, external shocks. Small and medium-sized enterprises are particularly at risk, as a single disaster can wipe out all or major parts of business capital. In *The Asia-Pacific Disaster Report 2012*, it was reported that Typhoon Ketsana caused \$58 million in damage in the Lao People's Democratic Republic, with 50 per cent of the losses borne by small farmers. The typhoon also caused \$4.3 billion in damage in the Philippines, with 90 per cent of the losses

⁴ United Nations Office for Disaster Risk Reduction and Economic and Social Commission for Asia and the Pacific, *Reducing Vulnerability and Exposure to Disasters: The Asia-Pacific Disaster Report 2012* (ST/ESCAP/2639).

⁵ USAID, "Natural disasters in 2012", *Cred Crunch*, No. 31 (March, 2013). Available from <http://reliefweb.int/sites/reliefweb.int/files/resources/CredCrunch31.pdf>.

sustained by poor urban households.⁴ In Cambodia, the same typhoon affected agriculture, livestock and fisheries, which are the economy's most productive sectors, primarily supporting the livelihoods of small and marginal farmers.⁶ In Pakistan, extensive floods in 2010 resulted in \$9.7 billion in losses, with 70 per cent of them absorbed by poor households and small and marginal farmers.⁴ In Thailand, poor agricultural labourers and daily wage earners in poor urban areas were severely affected by the 2011 floods, with at least \$3.6 billion in lost wages incurred by vulnerable populations with limited social protection.⁷

11. Severe and overlapping disasters and other shocks can derail countries from their development path, leading to a permanent loss in output by destroying capital stock, reducing fiscal space, increasing debt and eroding people's resilience. Small economies tend to be particularly vulnerable because they are less diversified and already under greater economic strain.⁸

12. ESCAP research shows that disasters can adversely affect the achievement of the Millennium Development Goals. When a portion of the GDP is lost because of a disaster, the attainment of the Goals are set back, as the activities allocated for poverty reduction may be diverted towards recovery and reconstruction. A series of major disasters can have cumulative negative effects on the economy of an affected country. For instance, the key productive agriculture and livestock sector of Pakistan, which accounts for 21 per cent of GDP, was severely affected by a series of devastating disasters, including an earthquake in 2005, cyclone in 2007 and extensive flooding in 2010 and again in 2011. As 70 per cent of the population is directly or indirectly dependent on agriculture, many of whom live below the poverty line, these disasters have had a devastating impact on poverty eradication efforts, which have been captured by poverty-related Millennium Development Goals indicators. Similarly, the damage caused by the earthquake and floods to schools and other infrastructure also have affected the education-related Millennium Development Goals indicators.⁴

13. In addition to natural disasters, economies can be affected by the other external shocks, such as global financial crises, volatile and high oil and food prices, and fluctuating performances of key sectors of the economy. Disasters can be detrimental to development efforts as financial resources intended for economic and social development need to be diverted for emergency relief and livelihood support to the affected population, along with recovery and reconstruction.⁴

III. Investing in disaster risk reduction

14. A decade after the devastating Indian Ocean Tsunami and adoption of the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters,⁹ Asia-Pacific countries have progressed towards a more proactive paradigm of disaster risk reduction and

⁶ Cambodian National Committee for Disaster Management, "Cambodia post-Ketsana disaster needs assessment", Report (Phnom Penh, 2010). Available from www.gfdr.org/sites/gfdr.org/files/GFDRR_Cambodia_PDNA_2010_EN.pdf.

⁷ World Bank, Government of Thailand, and Global Facility for Disaster Reduction and Recovery, *Thai Flood 2011: Rapid Assessment for Resilient Recovery and Reconstruction Planning* (Bangkok, World Bank, 2012).

⁸ *Building Resilience to Natural Disasters and Economic Crises* (United Nations Publication, Sales No. E.13.II.F.3).

⁹ A/CONF.206/6 and Corr.1, chap. I, resolution 2.

preparedness. The reactive disaster management practice — responding to disasters as they happen without prior sound investment in disaster risk reduction and preparedness — is no longer appropriate. The Framework provides the impetus and momentum for building informed intentions to reduce disaster risks by placing it as a policy priority with the corresponding institutional strengthening. However, *The Asia-Pacific Disaster Report 2012* points to a gap between the intended policies and the actual practice in practical and local action towards addressing the underlying risk factors.⁴

15. Countries in the region, in general, are aware that investing in disaster risk reduction and building resilience are crucial for achieving sustainable development and that disaster risk should be considered in development planning and national budgeting. Only a little more than half of them have systems in place to implement the integration, and only slightly more than one-third have reported that funds have been allocated for risk reduction and prevention.¹⁰ Notably, Bangladesh, Indonesia, Japan and the Philippines are among the countries that have taken positive steps to mitigate the risks. These steps have resulted in lower human and economic losses from disasters.

16. There is still much to be done to expand and strengthen investment in the multisectoral development programmes, especially investment that is explicitly directed towards reducing risks. The extent of resources required for mainstreaming disaster risk reduction in the different hazard and socioeconomic contexts of a country have yet to be fully understood. However, it is generally accepted that mainstreaming disaster risk reduction is only efficient when public investments are strategically coupled with resilience-building programmes in critical sectors of the economy.

17. Cost-benefit analysis is useful for governments seeking to compare the cost-efficient alternatives of projected development investment scenarios with the projected aggregate benefits accrued from integrating disaster risk reduction. For example, the benefits of weather forecasts exceed costs, on average, by a factor of 5:1 or 10:1, with some countries reaping larger benefits.¹¹ Such cost-benefit analysis helps government make the case for investment in integrated flood control combined with cyclone preparedness, coastal zone management and food security programmes.¹² Resilience-building components could also be assessed and integrated into the social, productive, infrastructure and cross-cutting sectors of development planning.

18. Examples of cost benefit analysis with regards to disaster risk reduction include the following:

(a) An ex ante investment made in Fiji in a local level flood warning system for the town of Navua, is estimated to save \$3.7 to \$7.3 for every dollar spent;

(b) A mangrove planting programme in Viet Nam benefited the local coastal communities by spurring a number of economic activities while

¹⁰ United Nations Office for Disaster Risk Reduction, *From Shared Risk to Shared Value – The Business Case for Disaster Risk Reduction. Global Assessment Report on Disaster Risk Reduction* (Geneva, 2013).

¹¹ World Bank, “*Weather and climate services in Europe and Central Asia*”, Working Paper No. 151 (Washington D.C., World Bank, 2008).

¹² Bangladesh, Ministry of Food and Disaster Management, “Food security and disaster management programme of Bangladesh” (n.d.). Available from: www.dmic.org.bd/dmin/?q=system/files/FS%26DMP_DG_DMB_paper.pdf (accessed 2 September 2013).

building environment resilience to disasters. In monetary terms, it demonstrated a high cost-benefit analysis with a return of investment as high as \$55 for every dollar spent in terms of ecological benefits;

(c) If an advanced weather prediction system had been in place when Cyclone Sidr struck Bangladesh, forecast lead-times could have been extended to five days, and the areas at risk could have been identified with greater accuracy, resulting in benefits of about 25 times the cost of the system due to a significant reduction in damage. In addition, there would have been a reduction in the loss of human life and affected population.¹³

19. The ESCAP-supported Regional Integrated Multi-hazard Early Warning System (RIMES) has extended similar economic benefits for infrequent events at the subregional level. The project has provided evidence that a regional collective system for tsunamis and hydro-meteorological hazards monitoring and early warning would require only slightly more than 20 per cent of the cost of these systems being developed by countries individually.¹⁴

20. The cost-benefit tool requires a quantitative analysis of benefits, some of which are not quantifiable and therefore should be viewed as part of a wider qualitative assessment. Developing better evidence from innovative efforts, creating standards for systematic investment and benefit data, and improved tracking of investment for reducing risks will contribute to strengthening the cost-benefit analysis to help improve the investment climate for national governments and international donor interests.

IV. Strategic approaches for mainstreaming disaster risk reduction into a development strategy

21. In the present document, it has been established that natural disasters have significant consequences on development. ESCAP research further shows that the countries of the Asia-Pacific region will be increasingly exposed to more frequent, larger and overlapping natural disasters amid other shocks. Such events highlight the interlinkage among economic, social and environmental factors in the development process, and thus result in the need to apply comprehensive solutions into development strategies. Governments need to tackle disaster risks not as managing a discrete, one-time event, but as part of an overarching strategy to build resilience to shocks by mainstreaming disaster risk reduction into development plans, poverty reduction frameworks and national budgets.

22. It is important to instil a culture of applying disaster risk assessment as an analytical and decision-making framework at all levels of government and across all sectors so that the practice of disaster risk analysis would become another regularly used decision-making tool, similar to that of environmental impact assessments, cost-benefit analyses and social impact assessments.

23. Disaster risk reduction measures may have to be mainstreamed gradually by planning and finance authorities into all sectors of medium and

¹³ Thomas J. Teisberg and Rodney F. Weiher, "Background paper on assessment of the economics of early warning systems for disaster risk reduction", submitted to the World Bank Group, Global Facility on Disaster Risk Reduction (2009). Available from www.gfdr.org/sites/gfdr.org/files/New%20Folder/Teisberg_EWS.pdf.

¹⁴ A.R. Subbiah and others, "Socio-economic benefits of early warning systems", (2010, unpublished).

long-term socioeconomic development strategies at all levels of government and across relevant ministries. It may be more realistic to aim for an incremental and iterative process of disaster risk reduction when taking into account the country context, specific needs and capacities. Depending on country circumstances and hazard exposure, governments may need to identify key sectors into which disaster risk reduction should be prioritized. In each of those sectors, actions need to be clearly defined in terms of investments, institutions and incentives. Some of those critical sectors and crucial interventions are discussed in the following sections.

A. Building economic resilience to disasters

24. A comprehensive framework must be incorporated in a country's macroeconomic framework. It should include both annual budgets and longer-term public investment plans. This is especially the case when the country in question is vulnerable to frequent natural disasters. Macroeconomic management of disasters has two dimensions. The first concerns policy choices related to *ex ante* disaster risk management. The second concerns *ex post* disaster relief and reconstruction — to restore the economy to its pre-disaster long-run growth path with the least disruption to the economy.

25. *Ex ante disaster risk management.* Ideally, an *ex ante* macroeconomic policy framework that focuses on long-term investments in disaster risk reduction should have four distinct components: risk identification; risk mitigation; risk-preparedness; and financial protection. The first component relates to identifying risks and social vulnerabilities. It is important to note that risk has structural and social dimensions, both of which must be identified. Empirical studies suggest that a society that makes adequate provisions for social safety nets is much better prepared to face a natural disaster than the one that fails to make such provisions. The second component relates to risk mitigation, which includes, among other things, regulatory and institutional reforms, such as land management, strengthening of building codes, investments in retrofitting existing buildings, and investments in dams in drought-prone areas. The third component relates to risk preparedness, which includes upfront investments in early warning systems, contingency planning and public training about risk prevention. The fourth component relates to financial preparation. It has two distinct dimensions, namely self-insurance and risk transfer.

26. *Ex post disaster response.* Faced with a natural disaster, governments can draw on reserves or seek new finance or embark on a macroeconomic adjustment programme. Some countries will be able to draw on reserves or be able to pay the costs out of current budgets. They can also establish with lenders “contingent credit” lines that enable them to borrow in the event of a disaster. Low-income countries should be able to rely on concessional aid or grants from international donors. In addition, they might assume an increase of remittances from workers abroad to families in distress.

27. In principle, a government could also increase commercial borrowing, but this may be difficult. Even countries that have access to international capital markets may find foreign borrowing expensive, especially after a disaster. If so, they may have to make adjustments by modifying fiscal policy, such as redirecting funding from planned projects, cutting discretionary expenditure or raising taxes on high-income earners. The choices depend on the current state of the economy; if the economy is overheated with a risk of inflation, the government might consider imposing a temporary tax on high-income citizens in the form of a reconstruction levy.

28. *Monetary policy after a natural disaster presents a classic dilemma.* How to use the same policy to reconcile two competing objectives, namely maintaining price stability while restoring pre-disaster levels of output and employment. Some policymakers give priority to price stability and therefore tighten the money supply, but this could worsen unemployment and poverty. In fact, many economies are operating far below optimum levels of output, so fears of inflation may be unfounded.

29. As recommended in the ESCAP theme study for the sixty-ninth session of the Commission, when a disaster is occurring, it is best not to mechanically pursue prudential norms of macroeconomic stabilization. Instead, the overarching aim should be to arrest the spread of the shock to the real economy, to labour markets and above all to the poorest and most vulnerable.⁸ Moreover, even in “good times”, there is no unique threshold of stability for each macroeconomic variable — for growth, inflation, the fiscal deficit, the current account deficit or the level of public debt. Rather, there is a continuum of thresholds for various combinations of those key variables. Developing countries should thus not have an overly mechanical interpretation of macroeconomic prudence. While maintaining short-run stability, they should instead be guided by the goals of long-run economic development and poverty reduction. This requires striking a balance between long-term development and short-term macro stability.

30. *Balancing ex ante vs. ex post spending.* While it is well understood that prevention is better than a cure, in practice, there are many obstacles to this approach. Countries may not consider risk reduction as an efficient investment. This is indeed the case when the effects of disasters are relatively small and can easily be coped with, but there can also be situations of “moral hazard”. Low-income countries may be tempted to underinvest in prevention if they believe that external post-disaster assistance will always be forthcoming. One of the biggest hurdles is the difficulty in comparing the immediate and real costs of prevention with the potential costs of recovery and rehabilitation. Arriving at the best balance between investment in risk reduction and in recovery and rehabilitation is not easy. Determining public priorities in disaster risk reduction therefore benefit from extensive stakeholder participation in national planning and budgetary processes.

31. Countries that have high risk to disasters are giving greater priority to disaster risk reduction in order to minimize ex post relief and reconstruction spending. For example, in Japan, budgetary allocations are made for four broad categories of risk reduction and recovery, namely scientific technology research, disaster prevention and preparedness, national land conservation and post-disaster recovery and rehabilitation. On average, from 1995 to 2004, the Government allocated \$50 billion annually, representing 5 per cent of general funds in the national budget, of which 75 per cent of it was spent on disaster mitigation and preparedness.⁸ The Philippines also places high priority on disaster risk reduction. On average, from 2009 to 2011, a total of 69 per cent of the Government’s annual disaster risk reduction budget was set aside for projects and programmes that reduced the exposure of population and assets. These included projects on flood control, forest management, soil conservation and watershed management. In comparison, only 27 per cent of the budget was allocated to disaster response and recovery. Similar trends are emerging in Indonesia and in Bangladesh where disaster risk reduction has been accorded high priority. Several Asia-Pacific countries are thus shifting the emphasis from disaster response to disaster risk reduction.

B. Investing in resilient critical infrastructure

32. Even infrastructure that is well designed, constructed and maintained does not always withstand major natural disasters. Governments, therefore, need to identify critical infrastructure that require higher margins of safety in order to better withstand the adverse effects of future disasters. Governments should look into a resilient critical infrastructure system that includes not only the hard infrastructure in terms of buildings or physical networks, but also the supporting institutions and associated policies and regulations.

33. Disasters frequently disrupt community power supplies and telecommunications and cause extensive damage to transport infrastructure, wastewater and water supplies. The greatest impact to social infrastructure is typically to housing, schools and hospitals. Power, water, wastewater, communication and transportation are regarded as critical lifeline systems and need to be restored within a few hours to support emergency response operations.

34. An *ex ante* policy framework aimed at infrastructure resilience should take into consideration risk identification and assessment, risk mitigation and risk management in terms of consequence management and infrastructure protection. Potential hazards and related risks should be taken into account in the design of infrastructure to ensure that it complies with the safety standards for disaster reduction. All critical existing infrastructures should be retrofitted to the extent possible in order to reduce the adverse effects of future disasters. Strict norms should be set for infrastructure to enable it to withstand shocks while ensuring that backup systems are in place and new risk is not introduced.

35. Integrating disaster risk reduction measures and making infrastructure more resilient requires significant investment. Adapting high design and maintenance standards for critical infrastructure would increase the serviceability and lifespan of costly structures.

36. In addition to serving as a source of financing for recovery and reconstruction efforts after a disaster, multilateral development banks should support government-activities to make infrastructure more resilient. Another potential source of financing could be the private sector through public-private partnerships in infrastructure development. In response to the global financial and economic crises, several Asia-Pacific countries have created large economic stimulus plans and strategies that include investment in major infrastructure projects, which take into account disaster risks. For example, total investments in infrastructure components made by China, India, Indonesia, Japan, Malaysia, Republic of Korea, Thailand and Viet Nam was \$365 million, or 41 per cent of the amount allocated for fiscal stimulus packages.⁸

37. Developing resilient critical infrastructure requires coordination among many sectors and levels of administration. As the various forms of infrastructure are becoming increasingly interdependent, failure in one system can drastically affect other systems. In such an endeavour, the focus should not only be on physical infrastructure but also on the associated policies, guidelines and by-laws.

C. Building community resilience

38. The poor are the most exposed to disasters as they have few buffers when crises hit and are more likely to be living on hazardous land, such as earthquake fault lines, floodplains or coastal areas. Already disadvantaged by social and economic imbalances, disasters drive them into vicious cycles of

poverty and chronic hardship, sometimes for generations. Among the poor, the most vulnerable to disasters are “excluded” individuals — those who are outside many societal bonds and relationships. Among them are older persons, ethnic minorities and those with disabilities or living with HIV and AIDS. Those groups have less access to networks and fewer support groups that they can turn to.

39. Those who are affected cope by leveraging their economic, social and natural resources. They may be forced into “erosive” strategies that lead to a vicious cycle of poverty. This includes selling their livestock or agricultural equipment, resorting to high-interest loans, reducing their food intake, foregoing medical treatment, pulling children out of school or overexploiting natural resources. All those measures can perpetuate poverty and reduce the welfare of future generations.

40. On the other hand, the more resilient groups or households can respond with “non-erosive” strategies that do not endanger their future livelihoods. They might be able to draw on their savings, sell non-essential possessions or consume less expensive food. They could also seek additional work, either locally or by migrating to a nearby city. In addition, they might draw on family or social solidarity networks for food supplies or informal loans, or engage in reciprocal labour exchange.

41. Governments need to support those forms of community resilience through various means. One important way is to strengthen social protection systems, including old age and disability pensions, unemployment pay, maternity and child benefits, and universal access to essential health care. A basic social protection floor provides buffers to fall back on, and should be in place before a disaster strikes. Social safety nets introduced during disasters need to build on existing mechanisms and contain flexible financing systems so that they can be scaled up for episodic shocks.

42. Community resilience and responding effectively to disasters demands rapid dissemination of information among people, governments and other actors involved in disaster management. Such exchange of information is possible thanks to a variety of technologies, including, among other things, print, radio, television and the Internet and mobile and smart phones. In addition to effective early warning systems, communities must to be prepared to react to disasters that occur without warning, such as flash floods or earthquakes.

43. Local governments play a critical role in those efforts, especially in preparing for and responding to more frequent disasters. They can support community responses and engage vulnerable groups in decision-making and help them become more resilient. An important contribution to greater local resilience is effective decentralization, which can improve the delivery of key public services. Decentralization, however, is only effective if local governments are accountable and transparent and have the capacity in terms of resources, such as a sufficient number of trained staff. In the absence of those conditions, decentralization can lead to rent seeking and capture by local elites. Governments should therefore support efforts that facilitate effective decentralization.

D. Protecting essential ecosystems

44. Natural ecosystems are important for reducing disaster risks and impacts as they act as natural buffers, particularly against storms and floods, and also serve as important coping mechanisms in the case of a disaster, particularly for the rural poor. Coastal wetlands and coral reefs protect coastal

communities against storms and storm surges, and forests and wetlands provide storage capacity in the case of floods. Conversely, changing or blocking natural waterways and floodplains increase disaster risk by impeding the natural flow of water during a flood. Finally, natural ecosystems and resources are critical when considering the impacts of slow onset disasters, such as drought.

45. Though natural systems have large absorption capacities, once a tipping point is reached, they can suddenly collapse to another state with devastating consequences for many other sectors. Rising consumption and production patterns amid a growing population and large-scale urbanization are threatening the natural ecosystems in Asia and the Pacific and the services they provide. The demand for natural resources to produce goods and services has exceeded the environment's ability to replenish these resources, and this deficit will have significant economic, social and environmental implications.¹⁵

46. The effects of climate change will likely add to those pressures. They have the potential to further degrade land, significantly change natural ecosystems, limit water resources and generate more frequent and devastating natural disasters. Countries are already experiencing the impacts of climate change and people in several developing countries believe that those impacts are affecting their lives through more natural disasters and rising prices of basic household needs, such as food and fuel.¹⁶

47. The converging threats have serious implications on development and could undo many of the development gains achieved over the past several decades if not addressed now. Many member States are not only trying to reduce their resource consumption and the converging threats' impact on the environment, but are recognizing that some changes are inevitable and thus are trying to adapt to them.¹⁷

E. Data as a prerequisite for mainstreaming

48. Among the formidable challenges in the implementation of Hyogo Framework for Action and its transition to an agenda beyond 2015 is the challenge to make "resilience" more evidence-based. This limits the ability to implement development investment plans that are risk-sensitive. Lagging in the development of robust indicators hampers the translation of policy commitments into measurable and monetized investments, and undermines the monitoring of progress and the expected benefit over time, rendering risk reduction to be largely arbitrary, qualitative and process oriented.

49. Systematic information management is urgently needed to ensure evidence-based policymaking and the formulation of disaster risk-sensitive development strategies and the concomitant investments. This necessitates that disaster risk reduction be mainstreamed into national statistics to facilitate more iterative and predictive processes of risk assessment, planning, investment, progress monitoring and evaluation. Indicators, reliable data and valid methodologies need to be embedded in relevant development sectors to

¹⁵ Asian Development Bank and World Wide Fund For Nature (2012). *Ecological Footprint and Investment in Natural Capital in Asia and the Pacific*. Available from www.adb.org/sites/default/files/pub/2012/ecological-footprint-asia-pacific.pdf.

¹⁶ BBC Media Action, *Climate Asia: data portal* (London). Available from www.bbc.co.uk/mediaaction/climateasiadataportal/dataportal.

¹⁷ Document E/ESCAP/CDR(3)/2 contains discussions on those issues in greater detail, as well as provides some examples of what countries in the region are doing to address the impending threats, and what more is needed.

enable the accounting of the aggregate benefits of addressing the underlying risk factors.

50. There is an urgent need to improve disaster data at the national and regional levels in order to promote evidence-based policymaking for building resilience to disasters. This would entail having a core set of disaster data, and strengthening the capacity of countries to compile disaster data through a common approach. Such data need to be disaggregated to enable age- and sex-specific analysis to help governments direct interventions to the most vulnerable and marginalized segments of society.

51. At the same time, a regional core set of disaster statistics is needed to enable the pooling of data across countries and to undertake regional analysis or, in other instances, a transboundary risk area-based analysis, such as of river basins or climatic zones.

52. ESCAP, with support from Tohoku University, organized a meeting on improving disaster data to build resilience in Asia and the Pacific in Sendai, Japan in October. Among the participants in the meeting were representatives of national disaster management agencies and national statistics offices from a number of Asian countries, along with several international organizations. Based on progress at the country level and initiatives launched by the various agencies, the meeting endorsed an action plan to do the following: develop a core set of disaster statistics; and put together a road map consisting of technical and policy advocacy milestones. It was also proposed that the results of the action plan be submitted as substantive inputs to the sixth Asian Ministerial Conference on Disaster Risk Reduction, to be held in Bangkok from 23 to 26 June 2014, and to the Third World Conference on Disaster Risk Reduction, to be held in Sendai, Japan, in March 2015.

V. Addressing shared risks

A. Strengthening cross-border resilience to disasters

53. Enhancing regional cooperation is an essential component for building resilience as countries are increasingly faced with disasters and other shocks that have cross-border impacts. Therefore, it is of paramount importance to have in place a mutually reinforcing strategy for building resilience and sharing lessons, practical knowledge and experiences across countries and subregions. Some of the regional cooperation mechanisms for dealing with disasters in Asia and the Pacific are the following:

(a) *Regional pooling of resources and systems for effective monitoring and early warning.* Early-warning systems rely on four interrelated elements: knowledge of risks; monitoring and warning services; dissemination and communication; and response capability. All are equally important; failure in one will result in a collapse of the entire system. These four elements are now benefiting from advances in technology and communications, which are enabling people-driven forms of cooperation to transcend geographical boundaries. Sharing of resources also lowers costs. One study has concluded that if individual countries each developed their own early-warning systems for tsunami warnings in the Indian Ocean, the cost would be about \$50 million, with an additional expenditure of \$5 million to \$10 million per year for operating it. A collective system, on the other hand, would have required no more than \$1.5 million in operating expenditure. Moreover, warnings on hydro-meteorological hazards could be incorporated in the mechanisms with an additional investment of \$1 million a

year.¹⁴ An example of this type of collective system is RIMES, which was established with the support of the ESCAP Multi-Donor Trust Fund for Tsunami, Disaster and Climate Preparedness in Indian Ocean and South East Asian Countries;

(b) *Disaster preparedness.* Countries can also work together to agree on what to do when disaster strikes. The Association for Southeast Asian Nations (ASEAN), for example, has launched the ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management. The mechanism includes, among others things, the establishment of standard operating procedures for coordinating disaster relief and emergency responses among member countries. Similarly, Bangladesh, in collaboration with the SAARC Disaster Management Centre, which is mandated to serve the eight members countries of the South Asia Association of Regional Cooperation (SAARC), has made significant progress in developing a plan of action on disaster management. For the Pacific, countries of the subregion agreed to develop a regional strategy on disaster risk reduction and climate change adaptation at a meeting organized in Nadi, Fiji, from 8 to 11 July 2013, which was centred on the theme “Strengthening resilience: An integrated regional strategy for disaster risk management and climate change for the Pacific”;

(c) *Regional pooling of risks.* An efficient approach for addressing disasters, in particular those with cross-border effects, is through regional cooperation and the pooling of resources for risk financing. Building on the experience of the Caribbean region, the Pacific island countries have launched a pilot regional insurance pooling initiative;

(d) *Bridging regional cooperative mechanisms and initiatives.* ESCAP can function as a bridge for bringing together regional cooperative mechanisms that have similar expertise and mandates. For example, the ESCAP/WMO Typhoon Committee and the WMO/ESCAP Panel on Tropical Cyclones are addressing tropical cyclones in different subregions;

(e) *Synergizing regional initiatives.* ESCAP can provide a regional platform for the sharing of good practices and lessons learned in building resilience to natural disasters and economic crises through a regional approach among ASEAN and SAARC members, as well as with other regional organizations, such as the South Pacific Regional Environment Programme or the South Pacific Applied Geoscience Commission. The Asia-Pacific Regional Coordination Mechanism, which is chaired by the Executive Secretary of ESCAP, could bring additional valuable expertise and synergy to regional initiatives;

(f) *Knowledge-sharing.* ESCAP can provide a regional platform for the following:

- (i) Operationalizing the concept of “resilience” so that it can be incorporated into development strategies;
- (ii) Sharing member States’ strategies in addressing the interlinkages between social protection, disaster risk reduction and climate change adaptation and long-term development and poverty reduction strategies;
- (iii) Integrating resiliency aspects into development strategies by leveraging the secretariat’s unique access to member States’ development planning authorities;

(iv) Promoting a public-private partnership for resilience that aims to strengthen supply chains and trade;

(v) Developing regional references, principles or standards for improving disaster data, risk assessment practices, response preparedness and resilient recovery.

B. Building public-private partnerships in disaster risk reduction

54. Evidence from recent damage and loss assessments show that the manufacturing sector of an economy tends to be hard hit and experience major disruptions when production capital and assets are affected by disasters. This can be amplified by damages in critical infrastructure and other processes that are required to sustain production.

55. In the light of the substantial impacts on the private sector, and hence on the national economy, there is an urgent need to mainstream disaster risk reduction in the private sector. Even though the private sector has a valuable part to play in disaster risk reduction activities, it tends to overly rely on a supporting and enabling framework established by the government.¹⁸ Government is expected to take full responsibility in raising financial and material resources for disaster risk management and providing public support to address the impact of disasters. This misconception hampers efforts to foster a healthy partnership between the public and private sectors.

56. Governments play an important role in stimulating the private sector to mainstream disaster risk reduction into their activities. A policy framework to improve private sector disaster risk management could include efforts to encourage the development of business continuity plans and tax incentives as part of risk management strategies and the promotion of affordable insurance schemes, including micro-insurance services and products, particularly for vulnerable groups in the supply chains, such as small and medium-sized enterprises and small-scale farmers. On the other hand, the private sector should also be tasked with ensuring that their investments are more disaster risk-sensitive. This is manifested in improving their own resilience to risks and ensuring that their enterprises help reduce, and not induce or exacerbate, the risk to society.

C. Building resilient supply chains

57. Disaster risk reduction should also be mainstreamed in supply chains, as goods and services are increasingly made available through complex global chains of production and distribution. The growing regional integration and interconnectivity in Asia and the Pacific indeed adds value to efficiency, however, they also make countries more susceptible to external shocks when one part of the chain is disrupted. The disruption could be triggered by a natural disaster or by sudden changes in demand stemming from an economic downturn or recession. In such instances, small and medium-sized enterprises as well as enterprises that rely on inputs or intermediate goods from a single source are particularly exposed.

58. Firms in developing countries typically operate without buffers to fend off, absorb and recover from low probability with high consequence disaster events. Optimal strategies are needed to build supply chain resilience.

¹⁸ United Nations International Strategy for Disaster Reduction, *The Development of a Public Partnership Framework and Action Plan for Disaster Risk Reduction in Asia* (Bangkok, 2009).

They may include access to skilled workers and facilities to improve risk assessment, spatial diversification of production and supply, ensuring the availability of backup systems and the ability to transfer risk through insurance mechanisms.

59. Robust business continuity management needs to be promoted around the global value chain anchors. Thus mechanisms should be put in place to enable transnational corporations to build supply chain resilience by investing in strengthening their smaller business partners.

60. Disaster risk reduction should also be mainstreamed in the governments' policy framework for resilient supply chains. Some of the key objectives should to enable governments to provide better risk information and modeling systems and subsidize private insurance.

D. Strengthening risk monitoring and early warning

61. The Trust Fund contributed to the development of an integrated regional early warning system comprising a network of collaborative centres connected to subregional and regional centres.

62. The Trust Fund has helped improve early warning capacities and climate applications in 16 member States. One of the regional mechanisms supported by it is the Indian Ocean Tsunami Warning and Mitigation System (IOTWS) Standard Operating Procedures (SOP) for tsunami warning and emergency response, which is projected to save an average of 1,000 lives per year over the next 100 years. It also has supported several member States in areas such as tsunami risk assessment, coastal hazard mapping and SOP development.¹⁹

63. The usefulness of RIMES, an intergovernmental organization established with support of the Trust Fund, was confirmed at the First Regional Integrated Multi-Hazard Early Warning System for Asia and Africa (RIMES) Ministerial Conference, which was held in New Delhi on 21 June 2012. At the Conference, 21 countries pledged to strengthen the regional disaster early warning system.

VI. Regional cooperation in mainstreaming disaster risk reduction

64. The following section provides an overview of major regional cooperative activities and initiatives in the Asian-Pacific region in the area of disaster risk reduction and highlights of secretariat initiatives to support member States since the second session of the Committee on Disaster Risk Reduction in 2011.

A. Enhancing regional knowledge in building resilience

65. The theme study for the Commission's sixty-ninth session dealt with building resilience to natural disasters and major economic crises. The study contained, lessons learned and good practices along with policy recommendations in the context of sustainable development strategies to protect the region from multiple shocks.⁸

¹⁹ Details of the activities are provided in document E/ESCAP/CDR(3)/3.

66. The Commission in its sixty-ninth session adopted resolution 69/12 on enhancing regional cooperation for building resilience to disasters in Asia and the Pacific. In the resolution, it requested the Executive Secretary of ESCAP to do the following: facilitate the implementation of the outcomes of the United Nations Conference on Sustainable Development as they pertain to disaster risk reduction in the region; provide a platform for the members and associate members of the Commission to articulate a strong regional voice in favour of giving due consideration to disaster risk reduction in the United Nations development agenda beyond 2015; and enhance regional knowledge-sharing and, in particular, strengthen the capacity of member States to design and implement strategies and policies that mainstream disaster risk reduction into all sectors and levels of government.

67. With a view to provide member States with policy options to better mainstream disaster risk reduction into development strategies, ESCAP also published *The Asia-Pacific Disaster Report 2012* jointly with UNISDR. The report provides region-focused analysis and policy recommendations to address the twin challenges of vulnerability and exposure to disasters in the overall development contexts.⁴

68. Regional cooperation and the sharing of information and experience regarding the link between disaster risk reduction and development strategies are essential. Following the great East Japan earthquake and tsunami, the secretariat co-organized with the Government of Japan regional expert group meetings for sharing experiences and lessons gained from large-scale disasters among Asia-Pacific governments. Similarly, in response to the extensive floods in South-East Asia, the secretariat, in collaboration with the International Centre for Water Hazard and Risk Management and with support from the Japan Space Exploration agency, organized the South-East Asia Flood Risk Reduction Forum in Bangkok on 20 February 2012 to share information and lessons learned from the 2011 floods.

69. The secretariat's Asia-Pacific Gateway for Disaster Risk Management and Development is an interactive web platform that provides improved access to regional disaster risk reduction (DRR) policies, plans and projects, as well as serves as an online network for DRR experts from government ministries, civil society and international organizations. More recently, an inventory of hazard, vulnerability and risk assessments has been added. Further enhancements to the platform will include building of linkages with national geo-portals in Asia and the Pacific, promoting the compatibility of disaster databases among member States and developing regional communities of practice on DRR.

B. Building regional capacity in mainstreaming disaster risk reduction

70. The ESCAP regional advisory services continues to receive a constant flow of requests from member countries. In the last two years, specific requests were made by Afghanistan, Bhutan, Cambodia, India, the Islamic Republic of Iran, Kyrgyzstan, Maldives, Mongolia, Myanmar, Sri Lanka, Tajikistan, Thailand and Timor-Leste. The regional advisory services have been useful in addressing the capacity development needs of the member States in areas related to DRR policies and programmes.

71. In terms of providing standard-setting solutions that contribute to substantive outcomes, consultations from the regional advisory service in Afghanistan, for example, led to the development of the Afghanistan Strategic National Action Plan (SNAP) for Disaster Risk Reduction: Towards Peace and Stable Development. The Plan helps to identify the key projects in

Afghanistan under the multi-stakeholders' Istanbul Process on Disaster Management Confidence Building Measure (DM-CBM). ESCAP provided technical assistance to the United Nations Country Team Maldives in the formulation of the Low Emission Climate Resilient Development (LECRd) Programme, which was established under the United Nations Development Assistance Framework as a One UN initiative.

72. At the request of the Government of Maldives, ESCAP is assisting in the development of the country's national disaster management plan which is to be implemented after a disaster management bill is approved by parliament.

73. ESCAP helped the Government of Myanmar harness technologies to make early warning systems and multi-hazard risk assessments more effective by enabling access to satellite imageries, products and services, as well as by providing group training for capacity development to support the implementation of the Myanmar Action Plan for Disaster Risk Reduction. In Kyrgyzstan and Tajikistan, ESCAP has facilitated well-structured and customized group training for key officials using specific training modules developed by the Asian and Pacific Training Centre for Information and Communication Technology for Development (APCICT) of ESCAP. As a result of the training, the participants are more adept in using information and communications technology for DRR and climate change adaptation. Bhutan, Mongolia and Sri Lanka requested assistance from ESCAP in strategizing approaches for capacity-building and on ways to access high-end technological products and services. India requested that ESCAP assist in conducting an analytical study that addresses specific mainstreaming issues, such as building capacity for parametric insurance related to hydro-meteorological disasters to support risk transfer mechanisms.

74. At the request of the Islamic Republic of Iran, ESCAP provided assistance in the preparations of the programme of work of the Asian and Pacific Centre for the Development of Disaster Information Management in Tehran. This is a follow-up to resolution 67/4 in which the Commission decided to initiate the process for the establishment of this Centre.

75. In response to the request of the Government of Thailand to undertake a rapid post-disaster needs assessment of the 2011 floods, ESCAP collaborated with the United Nations country team and the World Bank to carry out a multisectoral damage, loss and needs assessment. The assessment included concrete recommendations on disaster risk reduction and build back better measures in the recovery and reconstruction strategy of all sectors.

76. Capacities of government policymakers and officials on the effective use of ICT for disaster risk management were enhanced through APCICT. National workshops on the Academy Module 9 on ICT for Disaster Risk Reduction were carried out in cooperation with national partners in Kyrgyzstan, Maldives and Tajikistan. A training-of-trainer workshop, in cooperation with the ESCAP Subregional Office for North and Central Asia and the Central Asian Research and Education Network, was held in Kazakhstan. To broaden its reach and applicability, the module has been translated into Bahasa Indonesia and Russian, and will be translated into Mandarin Chinese and Vietnamese. These resources are available online through the APCICT Virtual Academy.

77. APCICT also supported partner-driven initiatives on ICT and disaster risk management, such as a national training workshop organized by the Ministry of Communication and Information Technology, Indonesia, in June 2013 for government officials and policymakers. The Centre released a new

primer issue on ICT for disaster risk management for universities and academic institutions. A series of regional, subregional and national training-of-trainer and workshops for universities and academic institutions will be carried out to ensure the effective roll-out of the issue in the region.

78. ESCAP also organized a series of workshops to help build the capacities of members of the ESCAP/WMO Typhoon Committee and plans to continue to explore opportunities for this Committee to work with the WMO/ESCAP Panel on Tropical Cyclones. One such activity currently being supported is a joint project on developing standard operating procedures for multi-hazard early warning systems.

79. In Central Asia, ESCAP set up a subregional network for sharing of information and knowledge which helps countries improve disaster risk management in the subregion.

80. Twenty-two disaster-prone countries also benefited from a series of ESCAP-organized workshops on flood risk reduction in 2012 and 2013.

C. Outcomes of the fifth Asian Ministerial Conference on Disaster Risk Reduction

81. The fifth Asian Ministerial Conference on Disaster Risk Reduction was held in Yogyakarta, Indonesia, from 22 to 25 October 2012. Organized by UNISDR and hosted by the Government of Indonesia, the Conference adopted the Yogyakarta Declaration. ESCAP contributed to a session on integration of local level DDR and climate change adaptation into national development planning.

82. Regional dimensions of cooperation to enhance local capacity-building in disaster risk reduction and local resilience were reflected in the Declaration.²⁰ The Conference recommended that existing regional and subregional resources be used for local capacity-building, promoting regional exchange and collaboration to enhance local resilience through bridging existing practical methodologies and practices in local risk assessment and financing, and enhancing and supporting regional cooperation mechanisms and centres on disaster information management.

83. In pursuance of Commission resolution 69/12 on enhancing regional cooperation for building resilience to disasters in Asia and the Pacific, the secretariat is extending substantive support, in cooperation with UNISDR, in organizing the sixth Asian Ministerial Conference on Disaster Risk Reduction, to be hosted by Thailand in 2014.

84. In collaboration with the Asian Disaster Preparedness Center (ADPC), the secretariat is engaging with the private sector in broad-based consultative processes to strengthen the private sector's role in building resilience through effective partnership with the public sector.

VII. Issues for consideration by the Committee

85. The Committee may wish to invite member States to further promote mainstreaming disaster risk reduction into development strategies by developing general policy and sector-specific guidelines, and the necessary legal framework. Member States should be encouraged to extend

²⁰ See <http://5thamcdrr-indonesia.net/wp-content/uploads/2012/11/00-Yogyakarta-Declaration.pdf>.

responsibility for disaster risk reduction from the national disaster management authorities to the national policymaking platforms that shape development strategies, including the national planning authorities and finance ministries. Governments should put in place an enabling environment that includes intersectoral dialogues, policy frameworks, financing, building institutional capacity and integrating disaster risk reduction into disaster recovery and reconstruction.

86. In support of such a process, the Committee may wish to request the secretariat to further strengthen regional platforms to facilitate regional knowledge and experience sharing and promote mutual cooperation and pooling of resources to support the efforts of member States in mainstreaming disaster risk reduction into development strategies. The Committee may also request the secretariat to continue to strengthen the capacity of member States, particularly those with special needs, on those issues through regional advisory services and capacity development projects.

87. The Committee may wish to endorse the secretariat's plan to co-lead with ADPC the preparation of the studies for the sub-theme on public and private partnerships for DRR for the sixth Asian Ministerial Conference on Disaster Risk Reduction and, in this regard, to invite member States to render their cooperation and support.

88. The Committee may wish to request the secretariat, in collaboration with the United Nations Development Programme (UNDP) and other entities, to define and operationalize the concept of comprehensive resilience and explore the development of regional minimum standard disaster statistics to promote evidence-based disaster risk reduction policymaking and development strategy formulation. This includes efforts in developing resilience indices and indicators through the harmonization of disaster databases in the region, technical assistance extended to member States in identifying and capturing information that is essential for mainstreaming DRR into development, and the establishment of common standards that enable regional level analysis.

89. The Committee may wish to request the secretariat to continue to develop regional knowledge to strengthen policymaking through the publication of the subsequent *Asia Pacific Disaster Report*. The report should be prepared in line with the recommendations of the United Nations Conference on Sustainable Development. The secretariat may prepare the report jointly with UNISDR and other key partners, such as UNDP and the Asian Development Bank.

90. The Committee may wish to discuss various good practices in mainstreaming disaster risk reduction in a range of sectoral perspectives, particularly with regard to multisectoral national development strategies, planning and budgeting. The Committee may also wish to explore a set of regional principles that provide member States with references when mainstreaming disaster risk reduction into development strategies. In this regard, the Committee may also wish to deliberate on the relevant issues and policies with a view to providing the secretariat with guidance concerning the future direction of the subprogramme.