

**Economic and Social Commission for Asia and the Pacific**

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Integration in Asia and the Pacific

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**Review of the region's progress in the four areas of
regional economic cooperation and integration, keeping
in view the 2030 Agenda for Sustainable Development:
addressing shared vulnerabilities and risks**

Addressing shared vulnerabilities and risks in Asia and the Pacific

Note by the secretariat

Summary

The achievement of the goals and targets in the 2030 Agenda for Sustainable Development that are relevant to disaster risk reduction will contribute towards the achievement of several other Sustainable Development Goals. Many large-scale disasters, which have repeatedly undermined the development efforts of countries, have transboundary dimensions in terms of both the origin and the extent of impacts. Regional cooperation can thus significantly boost efforts to achieve the 2030 Agenda. In the regional road map for implementing the 2030 Agenda for Sustainable Development in Asia and the Pacific, which was adopted by member States of the Economic and Social Commission for Asia and the Pacific in 2017, this point was recognized and disaster risk reduction identified as one of the priority areas for cooperation. This document contains a discussion of vulnerabilities and risks that are shared across many countries in the region, focusing on disasters caused by natural hazards, climate change and food security, and strategic areas for regional action to address them are identified.

The Ministerial Conference on Regional Economic Cooperation and Integration in Asia and the Pacific may wish to consider the recommendations contained in this document and provide guidance on how to increase the region's resilience to shared vulnerabilities and risks, and on how the secretariat can support these efforts.

I. Introduction

1. At the first Ministerial Conference on Regional Economic Cooperation and Integration in Asia and the Pacific, in December 2013, ministers, senior policymakers and representatives of members and associate members of the Economic and Social Commission for Asia and the Pacific (ESCAP) adopted the Bangkok Declaration on Regional Economic Cooperation and Integration in Asia and the Pacific, in which

* E/ESCAP/MCREI(2)/L.1.

they resolved to work together in four areas: (a) moving towards the formation of an integrated market; (b) developing seamless connectivity in the region; (c) enhancing financial cooperation; and (d) increasing economic and technical cooperation to address shared vulnerabilities and risks.

2. This document contains a discussion of vulnerabilities and risks that are shared across many countries in the region, focusing on disasters caused by natural hazards, climate change and food security. The document is based on the analyses and recommendations of the Working Group on Increasing Economic and Technical Cooperation to Address Shared Vulnerabilities and Risks, which met in Bangkok in December 2014 and March 2015. Also considered are the outcomes of the deliberations of the Commission at its seventy-second session, in May 2016; the High-level Dialogue on Regional Economic Cooperation and Integration for Enhancing Sustainable Development in Asia and the Pacific, held in Bangkok in April 2017; and the ministerial panel discussion on regional economic cooperation and integration in support of the 2030 Agenda for Sustainable Development held during the seventy-third session of the Commission, in May 2017.

3. Despite the diversity among Asia-Pacific countries in terms of population, socioeconomic development and geography, many share vulnerabilities and risks. Among them are transboundary natural disasters, scarcity of natural resources, food security and climate change. Shared vulnerabilities and risks to socioeconomic development and environmental sustainability have been heightened with the increased interdependences among countries that regional integration brings. In this context, it is essential to recognize the value of regional cooperation mechanisms, and to realize their implementation, which includes sharing of best practices, experiences and expertise.

4. Disaster risk reduction is a cross-cutting issue that is interlinked with several of the Sustainable Development Goals. It is directly relevant for achieving the specific targets of ending poverty in all its forms everywhere (Goal 1) and making cities and human settlements inclusive, safe, resilient and sustainable (Goal 11), while building resilience is mainstreamed in many sector-related Goals, such as Goal 2 on agriculture and Goal 9 on resilient infrastructure. Goal 12 focuses on sustainable consumption and production, targeting resource efficiency, while Goal 2 is about ending hunger, achieving food security and adequate nutrition for all, and promoting sustainable and resilient agriculture. Goal 13, on climate mitigation and adaptation, includes the need to strengthen resilience and adaptive capacity to climate-related hazards and natural disasters.

II. Natural disasters and shared vulnerabilities

5. Many countries in Asia and the Pacific share vulnerabilities to environmental and disaster risks, arising, for instance, from seismically active fault lines that cross many national borders, ocean basins that experience frequent cyclones, and many river basins with flooding history and potential.

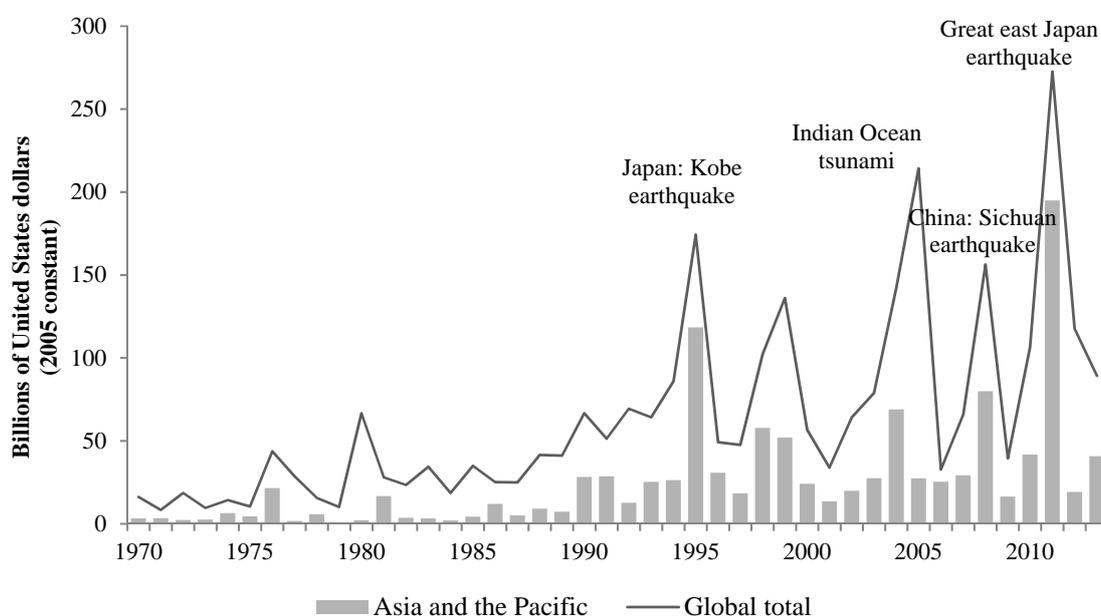
6. Over 6.5 billion people have been affected by natural disasters in the Asia-Pacific region since 1970. By comparison, the rest of the world, where around 40 per cent of the global population live, housed only 12 per cent of the total global affected population.¹ Since 1970, 88 per cent of the total affected persons worldwide have been in the Asia-Pacific region, which has also suffered much higher economic damage as a percentage of gross domestic product (GDP) than the rest of the world combined.² Since 2005, economic damage caused by disasters in the region has

¹ *Asia-Pacific Disaster Report 2017* (United Nations publication, forthcoming).

² EM-DAT: The OFDA/CRED International Disaster Database. Available from www.emdat.be (accessed on 14 February 2017).

amounted to \$523 billion, or 45 per cent of the global total, and eight of the ten largest disasters in terms of fatalities and four of the ten largest in terms of overall economic damage occurred in the region.³ Economic losses are higher if lost income, increased cost of production and other financial losses suffered by businesses and households as a result of damages to assets and economic activity are taken into account (figure I).⁴

Figure I
Rising economic damages, 1970-2015



Source: GDP data from ESCAP Statistical Online Database (available from http://data.unescap.org/escap_stat; accessed February 2017); economic damage data from EM-DAT: The OFDA/CRED International Disaster Database (available from www.emdat.be/; accessed February 2017).

7. Disaster risks are increasing in urban areas. Cities, especially those with large and growing populations, stressed environments and inadequate infrastructure, are highly vulnerable to natural disasters. The area subject to urban disaster risk is increasing, not only because of the rapid growth in the urban population, but also because of other contributing factors, such as the gradual erosion of ecological buffers. As cities are the centres of economic growth and account for large shares of GDP, this heightens the risks to national economies.

8. While floods and storms, followed by earthquakes, are the most frequent disasters in Asia and the Pacific, the region is also affected by multiple smaller-scale but recurring events, also known as extensive risks (high-frequency, low-severity events). Since 1970, 85 per cent of disasters in the region have been minor but recurrent. They have cumulatively affected 2.24 billion people and caused more than \$400 billion of damage by triggering ongoing erosion of development assets, such as local infrastructure, dwellings, schools, health facilities and roads.³

³ *Asia-Pacific Disaster Report 2015: Disasters without Borders – Regional Resilience for Sustainable Development* (United Nations publication, Sales No. E.15.II.F.13). Available from www.unescap.org/publications/asia-pacific-disaster-report-2015.

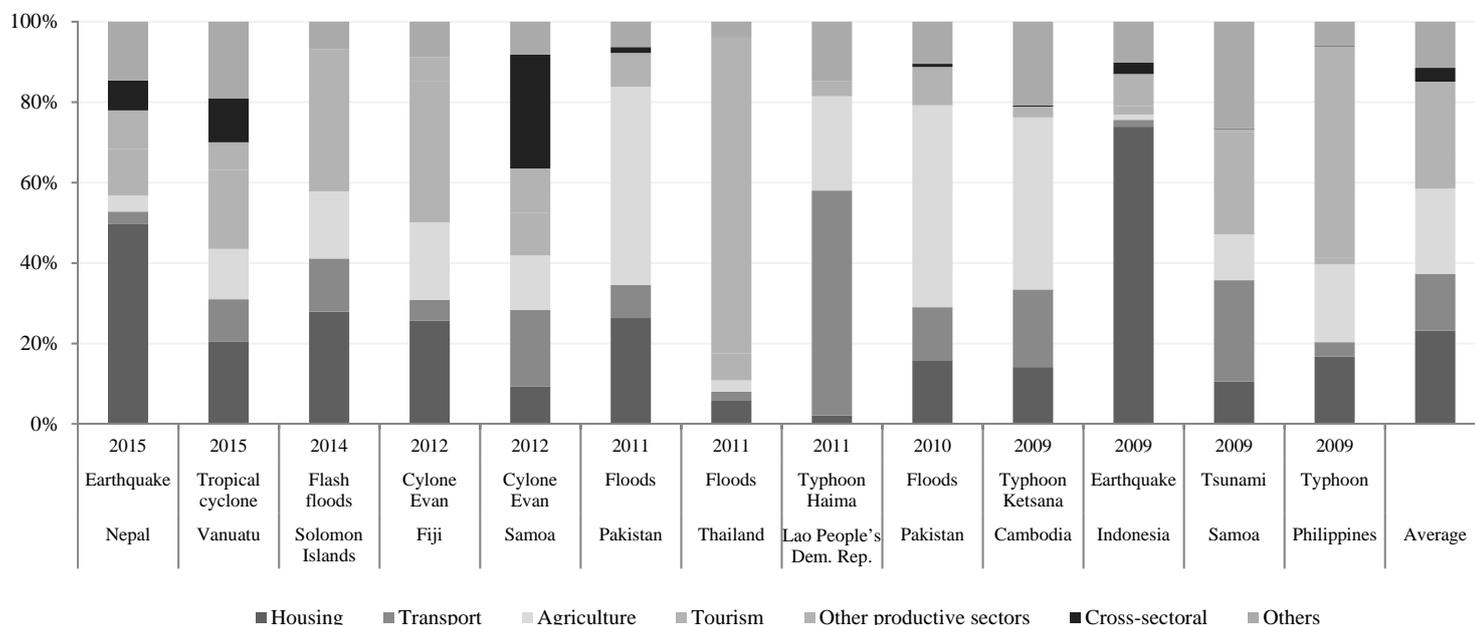
⁴ These include the 2004 Indian Ocean tsunami, the 2005 Kashmir earthquake, Cyclone Nargis in 2008, the 2008 Sichuan earthquake and the 2011 great east Japan earthquake.

9. As extensive disaster risks are frequently associated with the ecological vulnerability of affected areas, more attention should be paid to these risks to ensure sustainable development in the Asia-Pacific region. While hazards and exposure dominate the risk equation for intensive risk, extensive risk is more closely associated with such factors as inequality and poverty. As extensive risks cause the majority of morbidity and losses in developing countries, they can undo years of development efforts by negatively affecting economic and social gains. Consequently, they represent a challenge to the achievement of the Sustainable Development Goals, especially in areas and regions with widespread poverty and high social inequality.⁵

10. In terms of the after-effects of disasters, houses and other major infrastructure are the development assets most seriously affected by earthquakes and floods. As indicated by figure II, the range of major floods, droughts, cyclones and typhoons in the region since 2009 have had the worst sectoral impact on the housing and agriculture sectors, resulting in 23 and 21 per cent of the total loss in these cases respectively. Comparatively, over the same period, major disasters in the Asia-Pacific region have resulted in losses of 14 per cent in the transport sector and 7 per cent in the tourism sector.

11. The losses related to agriculture are particularly concerning for many countries of the region as more than 30 per cent of the labour force in Bangladesh, Bhutan, Cambodia, India, Indonesia, Nepal, Pakistan, the Philippines, Sri Lanka, Thailand and Viet Nam is employed in the farm sector. Thus, the damages and losses are often incurred by poor, small and marginal farmers and by semi-rural communities without insurance and lacking the financial resources needed to regain lost livelihoods.

Figure II
Major disasters and sectoral impacts in Asia and the Pacific
(Percentage)



Source: *Asia-Pacific Disaster Report 2015: Disasters without Borders – Regional Resilience for Sustainable Development* (United Nations publication, Sales No. E.15.II.F.13).

Note: “Others” refers to commerce, industry, mining and finance.

⁵ United Nations Office for Disaster Risk Reduction, *Global Assessment Report on Disaster Risk Reduction 2015: Making Development Sustainable – The Future of Disaster Risk Management* (Geneva, 2015). Available from www.unisdr.org/we/inform/gar.

12. While the damage and loss assessment figures discussed serve to underscore the severity of disaster impacts in the region, they nevertheless fail to consider long-term costs. This is particularly the case when considering the long-term costs of disasters for smaller economies that do not have well diversified economic structures and face macroeconomic instability. As regards less diversified economies, in a recent study it was highlighted that after disasters caused by cyclones, national incomes declined relative to their pre-disaster levels and did not recover within two decades.⁶ The largest event in the sample led to a reduction in long-term GDP of almost 30 per cent, compared to a “no disaster” counterfactual. In the Pacific small island developing States, it was found that after major cyclones the GDP per capita was likely to lag behind the “no disaster” counterfactual for many years.

13. Beyond the long-term costs of disasters, another area of particular concern is the transboundary nature of their impacts, especially those of hydrometeorological origin that are linked with river and ocean basins, climate, weather and agroecosystems. For instance, in addition to numerous seasonal small-scale floods that affect the region every year, major floods have affected China, India, Pakistan and Thailand in the last decade, while snowmelt and glacial lake outburst floods in high mountains, combined with heavy monsoon rains, have led to flash floods and flooding in Kazakhstan, Pakistan and Tajikistan.

14. Several of those large-scale floods have been transboundary, flowing across countries that share river basins such as the Amu Darya, Amur, Brahmaputra-Meghna, Ganges, Indus, Mekong, Salween and Yenisey. Flooding in the Mekong river basin can affect downstream riparian countries: Cambodia, the Lao People’s Democratic Republic, Thailand and Viet Nam. With about 70 per cent of the total global rice export trade originating in South-East Asia, floods have a significant impact on local and global food supplies. In such situations, effective supply-chain management becomes crucial to reduce shortages of rice and limit the increases in international prices.

15. In addition to flooding, the region is also highly vulnerable to droughts, which traverse river basins and large agroecological zones across national boundaries. Eighty per cent of the economic impacts of drought is shouldered by agriculture. Thus, prolonged droughts slow income growth in agriculture and in related agro-processing activities, with knock-on effects on employment and incomes in other parts of the rural economy.

16. Severe droughts can cause severe problems with respect to drinking water in arid and semi-arid areas, restrict municipal water withdrawals and lead to water scarcity and insecurity in both rural and urban areas. In extreme cases, drought has led to desertification, affecting approximately 1,400 million hectares of land across Asia, more than in any other region in the world.⁷ This has serious implications for future agricultural production, particularly for activities that require large volumes of water.

17. Storms also affect the region, with 50 to 60 of the annual average of 86 tropical cyclones occurring in three Asia-Pacific ocean basins whose coastlines are shared by multiple countries. With each cyclone able to traverse many countries, causing heavy rainfall and flooding until it finally makes landfall, the economic and social damages caused by these events are significant, as noted above.

⁶ Solomon M. Hsiang and Amir S. Jina, “The causal effect of environmental catastrophe on long-run economic growth: evidence from 6,700 cyclones”, NBER Working Paper, No. 20352 (Cambridge, Massachusetts, National Bureau of Economic Research, 2014). Available from www.nber.org/papers/w20352.

⁷ *Asia-Pacific Disaster Report 2015*, p. 51.

18. In addition to the transboundary nature of major hazards, disaster risks are often shared through economic networks among countries. Increased cross-border flows of trade and investment raise the transmission possibility of disaster impacts to a much more extensive chain of countries. Furthermore, disasters in Asia and the Pacific can also affect the global economy by disrupting global production networks, given the strong participation by the region in those networks. For instance, Japanese automobile production was almost halved and electrical component production fell by 8.25 per cent because of the 2011 Tohoku earthquake and tsunami. Three months after the disaster, because of shortages in components, automobile production dropped by 20 per cent in Thailand, 24 per cent in the Philippines and 6 per cent in Indonesia.⁸ These shared vulnerabilities and risks have undermined the potential of the region to achieve sustainable development. Driven partly by climate variability and climate change, significant changes are observed in the intensity, frequency and geographic location of the hazards as well as in the complexity of the transboundary origins and impacts of disasters.

III. Climate change and shared vulnerabilities

19. Climate change has exacerbated the intensity and incidence of hazards in many parts of the region. As climate change has transboundary and multisectoral impacts, the response to climate change has a strong interlinkage with regional economic cooperation and integration. The risks of disasters and climate change should be considered in the development of infrastructure in the region, including in cross-border infrastructure.

20. Climate change is a critical threat to the collective survival of small island developing States. Given that more than 99 per cent of their sovereign territories is located in the ocean, and that most of the islands' inhabitants are concentrated in coastal or low-lying areas, Pacific countries are among the most exposed and vulnerable in the world to climate change. A sea-level rise of half a metre, along with natural sea-level variation and more frequent and severe storm surges, will result in serious coastal inundation, threatening the livelihoods, infrastructure, health, food, water and physical security of communities.

21. Apart from extreme weather events, climate change is also adding to pressure on fragile island systems by increasing average ocean and land temperatures, changes to the seasonality and the duration of rainfall.⁹ For atoll States such as Kiribati, the Marshall Islands and Tuvalu, which are less than one metre above sea level in most places, the threat is existential.¹⁰

22. With the acceleration of the consequences of climate change and the concomitant increase in disaster risks, Pacific island countries face development challenges that are large and difficult to tackle by themselves. Natural disasters, particularly tropical cyclones, cause major disruptions and put enormous pressure on Governments to reconstruct and source the required finance. Identifying ways to manage risks and create opportunities to share or transfer disaster contingencies is thus essential.

⁸ *Building Resilience to Natural Disasters and Major Economic Crises* (United Nations publication, Sales No. E.13.II.F.3). Available from www.unescap.org/sites/default/files/ThemeStudy2013-full2.pdf.

⁹ *Intergovernmental Panel on Climate Change, Climate Change 2014: Synthesis Report* (Geneva, 2015). Available from www.ipcc.ch/report/ar5/syr/.

¹⁰ Organization for Economic Cooperation and Development and World Bank, *Climate and Disaster Resilience Financing in Small Island Developing States* (Washington, D.C., World Bank, 2016). Available from www.oecd-ilibrary.org/development/climate-and-disaster-resilience-financing-in-small-island-developing-states_9789264266919-en.

23. One of the best resources with which to address disaster and climate risks is a healthy natural environment supported by robust ecosystems. Unfortunately, much of this protection has been weakened by human-induced environmental degradation in the region. Disasters can then further damage the environment, raising the prospect of a downward spiral. Indeed, according to the Global Land Degradation Information System of the Food and Agriculture Organization of the United Nations (FAO), the ecosystems of 32 Asia-Pacific countries are experiencing medium to strong degradation, which can exacerbate the impact of natural hazards, affecting their magnitude, frequency and timing.

IV. Food security and shared vulnerabilities

24. Over the last fifty years, the Asia-Pacific region has made tremendous progress in reducing the proportion of undernourished people and achieving food security. The region as a whole has halved the prevalence of undernourishment, or the proportion of the population below the minimum level of dietary energy consumption, from 23 per cent in 1991 to 12 per cent in 2015.¹¹ Despite this progress, the region still faces persistent poverty and hunger, and remains home to approximately 65 per cent of people suffering from hunger worldwide.

25. The main obstacle to overcoming hunger is not an overall lack of food, but limited access to enough food. Many factors affect such access, including poverty, natural disasters, conflict and war, poor access to resources, lack of employment opportunities, lack of education, underinvestment in agriculture and instability in the world food and financial systems. Given that countries in the region share many resources critical to the production and distribution of food, food security also has strong regional dimensions. Food insecurity is a result of many factors, including supply-side constraints, inadequate demand because of poor income and inability to physically access food because of remoteness. Analyses of the average dietary energy supply adequacy ratio also reveal that factors causing food insecurity across countries and regions vary significantly. They include rigid food-trading regimes, inadequate domestic production, extremely high food waste throughout value chains and seemingly high food-stockpiling, which reduces food available for human consumption.¹²

26. Inter-seasonal and annual food production variability continues to be a major factor that affects the localized food insecurity of a large group of households in the majority of countries in Asia and the Pacific. Droughts, floods, excessive snowfall and other natural disasters precipitate these production shortfalls.

27. Weather and climate anomalies, such as those triggered by the El Niño phenomenon, have exacerbated food production shortfalls. As such, regional multi-hazard monitoring and early warning have the potential to play a key role in preparing key stakeholders for and building their resilience to extreme weather events and natural disasters.

28. Further to this, rapid economic growth in Asia and the Pacific has put greater pressure on natural resources. With limited per capita endowments, the region is particularly vulnerable to disruptions associated with volatile energy and resource prices, land use changes and climate change. Notably, these disruptions are becoming increasingly interconnected. The increasing use of natural resources at a rapid rate,

¹¹ ESCAP, Asian Development Bank and United Nations Development Programme, *Asia-Pacific Sustainable Development Goals Outlook* (Bangkok, 2017).

¹² FAO, International Fund for Agricultural Development and World Food Programme, *The State of Food Insecurity in the World 2013: The Multiple Dimensions of Food Security* (Rome, FAO, 2013).

generation of pollution and waste and ecosystem degradation could push countries in the region towards a catastrophic ecosystem collapse. Though natural systems have large absorption capacities, once tipping points are reached, they may suddenly crash, with devastating consequences for other economic and social systems.

29. Building resilience to such vulnerabilities and risks entails addressing this nexus of converging threats. This interconnected and complex scenario is forcing Governments across the region to accept that it is no longer sufficient to consider and address such challenges individually, but rather it is necessary to treat them as an interconnected system. Furthermore, it has shown how a single event that in isolation might seem manageable within national borders can trigger multiple and interrelated global shocks. The 2010 floods in Pakistan and the droughts in the Russian Federation together were translated by global financial and trade systems into higher food prices. Massive floods in Thailand in 2011 triggered a cascade of supply-chain failures, bringing production to a halt in factories around the world.

30. A whole range of policy options are available for regional organizations to support national food security. The Association of Southeast Asian Nations (ASEAN) has a long history of striving towards greater regional cooperation in the area of food security. Two of its pioneering efforts were the ASEAN Framework Action Plan on Rural Development and Poverty Eradication and the ASEAN Action Plan on Social Safety Nets, which aimed to ensure the protection of the most vulnerable sections of the communities. Some projects that were implemented to achieve this objective related to regional cooperation in human capital development, including capacity-building for employment promotion, manpower planning, skills training, social monitoring and design of emergency social safety nets. The ASEAN Integrated Food Security Framework and the Strategic Plan of Action on Food Security in the ASEAN Region have provided an overarching framework for the region to comprehensively address food security by defining goals, objectives, guiding principles and key components.

31. In the Colombo Statement on Food Security, which was issued during the Fifteenth Summit of the South Asian Association for Regional Cooperation (SAARC), held in Colombo on 2 and 3 August 2008, the Heads of State and Government recognized the importance of food security and the need to develop a people-centred short- to medium-term regional strategy and collaborative projects that lead to an increase in food production, investment in agriculture and agro-based industries, agricultural research and prevention of soil health degradation, development and sharing of agricultural technologies, sharing of best practices in procurement and distribution, and management of the climatic and disease-related risks in agriculture. The subsequent special SAARC meeting of agriculture ministers recognized the need to develop a harmonized network for safe movement of agricultural commodities in the region and collaborate on human resource development and capacity-building in identified areas, namely integrated pest management, pest-risk analysis, integrated nutrient management, post-harvest technologies, biotechnology and bioresource management.

32. The task of strengthening regional food stocks has received heightened focus recently. The ASEAN Food Security Reserve, initially established with a rice reserve of 50,000 tons contributed by ASEAN member countries, has expanded to include ASEAN Plus Three countries (ASEAN plus China, Japan and the Republic of Korea), with an earmarked stockpile of 787,000 tons. A three-tier system has been identified for releasing food stocks from the system: (a) receive rice on commercial contracts to meet supply-demand deficits; (b) obtain food stocks as a loan in an emergency; and (c) receive free food stock in severe cases. All three tiers have been used recently, indicating the Reserve's success. SAARC also replaced its food security reserve with the SAARC Food Bank at the Fourteenth SAARC Summit, held in New Delhi on 3 and 4 April 2007. This Summit also introduced new guidelines on withdrawals and negotiations and established definitions on food shortages and quality standards of

grains. The operationalization of the SAARC Food Bank has been under discussion for the past few years.

33. The Pacific Island Forum Leaders Meeting agreed in 2008 that food security requires a coordinated approach and engagement of Governments, national and regional organizations, international and multilateral organizations, the private sector, the food industry, farmers and fishers, consumers and civil society.¹³ Subsequently, the Pacific Food Summit held in Port Vila in 2010 endorsed the Framework for Action on Food Security, which outlined seven themes: leadership and cooperation; regulatory frameworks, enforcement and compliance and public-private sector collaboration; enhanced and sustainable production, processing and trading of safe and nutritious local food; protection of infants and vulnerable groups; consumer empowerment and mobilizing partners; a food security information system; and enhancement of land tenure systems and land-use policies, energy, transport, education and communication systems to underpin food security.

34. Regional organizations have developed innovative mechanisms for coordinating efforts to combat transboundary animal and plant diseases and sharing agricultural knowledge and research findings. Some examples of these mechanisms are the ASEAN Integrated Food Security Framework, the SAARC Global Framework for Containment of the Priority Transboundary Animal Diseases and the exchange of scientific information on agricultural production and consumption through the Asia-Pacific Association of Agricultural Research Institutions.

V. Addressing shared vulnerabilities and risks: main challenges

35. Improving the collective management of shared vulnerabilities and risks is a major challenge that needs to be dealt with through regional cooperation. A key impediment is the lack of data- and information-sharing across countries on disaster occurrence and impacts and losses at the regional level. Sharing data and information with neighbours and riparian countries is sometimes limited. Absence of global and regional standards on disaster statistics makes sound assessment of vulnerabilities and risks difficult. Such data, which should include information on transboundary river basin floods and slow-onset disasters, such as droughts, are needed to estimate regional disaster risks and transboundary hazards and strengthen early warning systems. Considering the large contingent liabilities associated with disasters, a second major challenge is to set aside sufficient resources to meet expected losses. This is especially important to avoid disruptive impacts of disasters on poverty reduction in particular and on implementation of the 2030 Agenda in general.

36. In addition, current levels of ex ante financing mechanisms and investment in disaster risk reduction are insufficient to significantly buffer economies from negative growth impacts. As a result of the low insurance penetration in the countries that are most vulnerable to disasters, another important challenge is to identify ways to manage risks and to create opportunities to share or transfer disaster contingencies. The challenge to build well-functioning risk transfer systems is even greater in countries characterized by low levels of financial development.

VI. Recommendations

37. Addressing the region's shared vulnerabilities will require strengthened regional cooperation, to avoid a reversal of the gains already made from regional economic cooperation and integration and to boost efforts being undertaken to achieve

¹³ The members of the Forum include: Australia, the Cook Islands, the Federated States of Micronesia, Fiji, Kiribati, the Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

the Sustainable Development Goals. While taking advantage of ESCAP programmes that already exist, including the Regional Cooperative Mechanism for Drought Monitoring and Early Warning, the Regional Space Applications Programme for Sustainable Development and the Asian and Pacific Centre for the Development of Disaster Information Management, additional efforts should be undertaken, as follows.¹⁴

38. While progress has been made in strengthening early warning for tsunamis and tropical cyclones, significant gaps still exist with regard to other cross-border hazards despite scientific advances and their widespread availability, such as in the area of weather and climate forecasting and space technology applications for disaster risk reduction. Regional economic cooperation and integration can facilitate regional action (a) to strengthen the existing regional cooperation platforms for tropical cyclones by extending coverage to the Pacific; (b) to deepen partnership with key stakeholders for effective end-to-end tsunami early warning systems; (c) to establish regional cooperation and data-sharing mechanisms, prioritizing flood forecasting in transboundary rivers basins where poverty is very high, as well as glacial floods and landslides; and (d) to extend the ESCAP Regional Cooperative Mechanism for Drought Monitoring and Early Warning to underserved countries.

39. To help with efforts to achieve the Sustainable Development Goals related to disaster risk reduction and resilience, the international network for multi-hazard early warning systems is being established, led by the United Nations in partnership with the World Bank and related development partners. As part of regional economic cooperation and integration, ESCAP will lead the regional component of this network through a regional action plan. The regional action plan envisages (a) strengthening the existing ESCAP/World Meteorological Organization (WMO) Typhoon Committee and WMO/ESCAP Panel on Tropical Cyclones and extending the partnership between ESCAP and WMO to the Pacific through the Regional Association V Tropical Cyclone Committee for the South Pacific and South-East Indian Ocean; (b) deepening the partnership between ESCAP and the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization for effective end-to-end tsunami early warning systems in the Indian and Pacific Ocean basins; (c) establishing a regional cooperation mechanism for early warning for transboundary river basin floods, to start with priority basins and a research network for glacial lake outburst floods, flash floods and landslides; and (d) partnering with the United Nations Environment Programme, the secretariat of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, and WMO to enhance regional cooperation mechanisms for combating sand and dust storms. While addressing the unmet needs of more effective regional multi-hazard early warning, the action plan also intends to facilitate the integration of vulnerability considerations into efforts to strengthen regional economic cooperation and integration to ensure that the developmental gains already made are not reversed by disasters.

40. Significant gaps exist in understanding the sectoral impacts of slow-onset disasters, such as drought and the El Niño phenomenon, making evidence-based policymaking a challenge. As an indispensable component of risk-sensitive development, regional economic cooperation and integration can establish arrangements for strengthening the science-policy interface and promoting innovative tools and institutional mechanisms already being implemented by some countries in the region – such as climate outlook forums and climate field schools – to deepen understanding of the sectoral impacts of slow-onset disasters triggered by drought, El Niño and La Niña, and climate change.

¹⁴ These recommendations are based on the Chair's summary of the High-level Dialogue on Regional Economic Cooperation and Integration in Asia and the Pacific, held in Bangkok on 20 and 21 April 2017. See E/ESCAP/73/INF/9.

41. Alongside traditional financing mechanisms, index-based or parametric insurance has the potential to increase the efficiency and effectiveness of disaster insurance, as it is based on a scientific and more transparent determination of payment. For small countries that may experience great difficulty in financially managing disaster impacts, risk pooling could be an attractive strategy. In this case, regional cooperation is very worthwhile because it not only allows countries to transfer risks by pooling them, but also enables them to use this pool to purchase reinsurance at a much lower premium than would have been the case had each country approached the market individually. Similar to other types of insurance, the insurance pool should be diverse enough to cover different risk exposures, thus enhancing the attractiveness of wider regional cooperation. Regional economic cooperation and integration can promote regional peer learning on index-based or parametric insurance and risk pooling to increase the efficiency and effectiveness of disaster risk financing based on advances in space applications, mobile technologies, and weather and climate models. One priority area for regional economic cooperation and integration could be the establishment of an analytical infrastructure for peer learning, such as a regional knowledge platform to promote the sharing of experiences in disaster risk financing and in the operationalization of parametric insurance among countries in the Asia-Pacific and other regions.

42. Regions can play a decisive role in food security in several ways, including: (a) building integrated regional food markets to insure against localized food production shortfalls that a country alone may not be able to withstand; (b) coordinating policies and sharing information for sustainable food production; (c) managing transboundary resources better, thus minimizing potential impacts arising from climatic changes; and (d) pooling food security risks through innovative mechanisms.

43. Increased confidence in regional food markets can minimize price hikes that are often a result of panic buying because of shortfalls in local food production. Trade restrictions imposed on food trade during the 2007-2008 food crisis are often used by countries to argue for food self-sufficiency, frequently at the expense of potential efficiency gains from the alternative use of precision land and other resources.

44. Confidence also needs to be built on the quality and safety of food by harmonizing sanitary and phytosanitary standards and certification mechanisms, simplifying and increasing the transparency of administrative procedures and documents and implementing them with more vigour. Coordinating policies and sharing information can increase food production, allowing for greater use of comparative advantages based on regional differences in the soil and climatic conditions suitable to produce different varieties of plants and animals. This can also promote the use of better plant varieties, genetic resources and inputs available within larger geographic regions.

45. Opportunities to use better technology in agricultural production, reducing post-harvest losses and knowledge in food preparation and processing can also lead to improved food security outcomes. Sharing information on production systems, technology and other information required for food production can be a fundamental force in re-establishing trust among countries on the regional food markets. Sharing knowledge on transboundary plant and animal diseases has become an essential component of agricultural policy because of the increased likelihood that diseases will spread in the current global production and consumption systems.

46. The Ministerial Conference may wish to consider the recommendations contained in this document and provide guidance to the region on how to increase its resilience to shared vulnerabilities and risks, and to the secretariat on how to support these efforts.