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Opportunities to build resilience to natural disasters and major economic crises

Note by the secretariat **

Summary

The Asia-Pacific region faces multiple crises. The current economic slowdown in developed economies, reduced demand for regional exports and the high volatility of commodity markets continue to pose threats to the region's economic growth and development. The high incidence of natural disasters during this time of economic crises exacerbates the disasters' social and economic impact. This highlights one of the most pressing contemporary development challenges that the region faces: the need to build resilience to multiple shocks that are increasingly occurring simultaneously.

In the present document, resilience is defined as the capacity of countries to adapt to dramatically changed circumstances caused by major economic crisis and natural disasters to enable their people to withstand, absorb and adapt to these shocks and continue to lead the kind of life they have the reason to value. Policy action in four areas can help to boost resilience to shocks: promoting macroeconomic resilience; building community resilience; protecting supply chains; and minimizing exposure of critical sectors and systems. In each of these areas, regional cooperation is needed to integrate the critical elements of resilience at the regional and global levels.

Building resilience to natural disasters and economic shocks requires mainstreaming disaster risk management into long-term development strategies at all government levels and across all relevant ministries, including the planning and finance ministries. It also calls for strong political will and leadership with regard to protecting lives and economic assets from disasters and addressing subsequent shocks that cut across boundaries.

ESCAP provides member States with the regional platform to collectively identify challenges, share experiences and strengthen regional cooperation on building resilience to natural disasters and multiple shocks. Building regional resilience also entails the capacity to shape global actions. Member States tend to be at the receiving end of economic crises and should therefore forge a strong, coordinated regional voice on global governance, using the Commission as a platform to move the global agenda forward.

* E/ESCAP/69/L.1.

** Due to the need to incorporate views and comments from experts made during an expert group meeting on the theme study, which was held on 26 and 27 February 2013, this revised pre-session document has been submitted past the established deadline.

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I. Introduction — What is resilience? Why now?

1. The Asia-Pacific region faces multiple crises. The current economic slowdown in developed economies, the reduced demand for regional exports and the high volatility of commodity markets continue to pose threats to the region's economic growth and development. The high incidence of natural disasters during this time of economic crises exacerbates the disasters' social and economic impact. This highlights one of the most pressing contemporary development challenges that the region faces: the need to build resilience to multiple shocks that are increasingly occurring simultaneously.

A. Defining resilience

2. The working definition of resilience in the present document is: The capacity of countries to adapt to dramatically changed circumstances caused by major economic crises and natural disasters to enable their people to withstand, absorb and adapt to these shocks and continue to lead the kind of life they have the reason to value.

B. Why resilience is important?

3. The focus on resilience is crucial in the current environment because the simultaneous occurrence of multiple shocks, particularly economic crises and natural disasters, is increasingly becoming the “new normal” in Asia and the Pacific as indicated by the following:

(a) *Asia and the Pacific is not immune to the contagion of external crisis.* The region has been relatively free from self-inflicted crises but it is not immune to the impact of those that originated externally. Falling demand from the West, which started with the global economic crisis in 2008, has resulted in a broad-based slowdown. In 2012, growth in developing Asia was estimated to be 5.7 per cent, one of the lowest in the past 10 years.¹

(b) *Increased interconnection of financial markets enables participants to share risks but also creates the potential for systemic failures.* The existence of many competing banks may give the impression of a robust credit market that is capable of withstanding shocks. However, if banks are closely interlinked, they are susceptible to the domino effect of financial contagion. Interbank networks usually have a small number of banks that act as a hub for the system, with thousands of links to other banks. Such networks are resistant to random failures but are vulnerable to failures of the hubs. These financial networks are also vulnerable to contagion from political and social networks. Different from natural hazards, financial shocks have a built-in self-fulfilling prophecy, with the risks of crises increasing when people think that they are more likely to happen.

(c) *Financial integration increases volatility.* Capital inflows to developing Asia-Pacific countries have risen significantly in recent years.² Rapidly increasing capital market integration intensifies the potential risks resulting from the cross-border transmission of shocks. Moreover, the majority of the capital flows to developing Asia-Pacific countries are the more volatile types of short-term portfolio investments.

(d) *Increased interconnection of trade while promoting economic growth,* makes the region more vulnerable to external demand shocks. Over the past 10 years, world trade has almost tripled and has become more interconnected. In 1993, some 55 countries were responsible for the top 75 per cent in value of all bilateral trade in the world. By 2010, that group had increased to 74 countries. An increasing number of trading partners usually helps to mitigate an export demand crisis, but, under the current trading system, this effect may be reduced as the economic cycles among major trading partners are synchronized. In recent years, countries have boosted their level of trade and trading partners while at the same time, their production has become increasingly integrated. Total trade in intermediary goods used in the production of final capital and consumption goods rose from about \$3.2 trillion in 2002 to more than \$7.5 trillion in 2010.³

(e) *High and volatile commodity prices.* Tight global supply and disasters affecting major food producing regions coupled with financial speculation have produced a “new normal” of persistent volatility and high commodity prices. High prices of food and fuel threaten food security, increase inflation and slow the rate of poverty reduction. Sudden price moves can also create adverse changes in terms of trade, particularly for major oil and mineral exporters. Least developed countries are particularly vulnerable to this. In 2009, with the sudden drop of prices of commodities,

¹ *Economic and Social Survey of Asia and the Pacific 2013* (United Nations publication, forthcoming).

² ESCAP, based on data from CEIC Data and International Financial Statistics, International Monetary Fund.

³ ESCAP, based on data from United Nations Statistics Division, Commodity Trade Statistics database (COMTRADE).

GDP growth slipped more than 10 percentage points compared with 2007 in Bhutan and the Lao People's Democratic Republic.⁴

(f) *Disasters disrupt supply chains in the region.* As the economies of Asia and Pacific become more integrated, natural disasters that affect the region as a whole by causing disruptions to production and supply chains of goods and services have become more frequent. A recent example of this is the 2011 floods in Thailand during which the spillover effects from the disruptions in Thai manufacturing adversely affected manufacturing production in Japan and other South-East Asian countries.

(g) *Asia and the Pacific is the most disaster-prone region in the world.* Global incidence of natural disasters has increased over the past three decades, with the Asia-Pacific region experiencing the sharpest increase. The region has also suffered the most. In the past decade, a person in Asia and the Pacific was almost two times more likely to be affected by a natural disaster than a person in Africa; almost six times more likely than a person in Latin America and the Caribbean subregion, and almost 30 times more likely than a person in North America or Europe. During the period 2000-2012, about 2.5 million people were affected by disasters in this region and almost 800,000 were killed.⁵

(h) *Losses and damages have been on the rise.* Major catastrophes incurring large economic costs have become more frequent over the past 20 years. Countries hit by large shocks can experience a shift in their growth trajectories, which, in turn, results in a permanent loss in total output. The impact is harder in smaller economies. In the past five years, the average annual losses as a percentage of GDP stemming from natural disasters was almost two times higher in low income countries than in lower middle income countries and more than 10 times higher than in upper middle and high income countries.⁶

(i) *Risks of disasters are unevenly distributed.* In the Asia-Pacific region, a person living in a least developed country, and in a small island country, in particular, is much more likely to be affected by natural disasters than someone living in any other country in the region. Similarly, when economic risks are mapped with indicators, such as the Economic Vulnerability Index, the overall picture that emerges is of a very uneven distribution of risks in which, once again, small island countries are more at risk. Within countries, the poor and the most vulnerable groups are the most exposed to these risks.

C. Tracking Resilience

4. An ESCAP-developed indicator of intrinsic resilience that measures the built-in capacity of a country to adapt to shocks shows that resilience in the Asia-Pacific region is on average lower than in other developing regions and has improved very little over the past two decades. The assessment is based on a combined measure of two main elements that influence the intrinsic capacity of the country to adapt to shocks: (a) the built-in capacity of the economy to adapt to changed circumstances in order to be able to

⁴ Depapriya Bhattacharya and Shouro Dasgupta, "Global financial and economic crisis: exploring the resilience of least developed countries". *Journal of International Development*, vol. 24, August 2012, pp. 673-685.

⁵ ESCAP, based on data from EM-DAT: The OFDA/CRED International Disaster Database.

⁶ Ibid.

continue to function during times of crises; and (b) an equitable society that empowers people to be better able to absorb and adapt to shocks.

5. The regional average must be looked at carefully as it hides differences across and within the Asia-Pacific subregions. East and North-East Asia has, on average, much higher resilience than other subregions, while South-East Asia has average resilience comparable with the global average. The other subregions have below global average resilience. There have been improvements in the average resilience in the North and Central Asia and South and South-West Asia subregions, particularly since the late 1990s.

6. Countries in the region with lower intrinsic resilience are also part of the group of least developed countries. In general, smaller economies have fewer productive capacities and are expected to face higher challenges in adapting to changed conditions than more diversified economies when affected by shocks of the same magnitude.

7. With other things being equal, higher resilience is found in countries with higher income per capita. Urbanization also has a positive effect on resilience. Cities comprise the largest share of the economic complexity of countries and, in the aftermath of shocks, new connections are more likely to be established in the network of business and resources located in cities than in rural areas. Higher resilience is also associated with more efficient quality of public services, the quality of the civil service and the degree of its transparency and accountability, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Those are all important elements that, in the aftermath of a shock, contribute to efforts to mitigate its negative effects.

D. Building resilience

8. While it is the case that ex-ante investments in risk reduction, whether to natural disasters or economic crises, pays off, in practice, many developing countries still emphasize ex-post spending on response and recovery. There are many complex reasons behind this seemingly short-sighted behaviour among policymakers. Among them are human cognitive failures in understanding and internalizing risks, difficulty in applying multi-sectoral approach for dealing with complex and interconnected challenges posed by multiple shocks. Countries may need to be aware of these blind spots in making policy decisions.

9. Action in four areas can help to boost the resilience of countries: promoting macroeconomic resilience; building community resilience; protecting supply chains; and minimizing exposure of critical sectors and systems. In each of these areas, regional cooperation is needed to integrate the critical elements of resilience at the regional and global levels.

II. Macroeconomic framework for resilience

10. Some likely macroeconomic impacts of natural disasters are deteriorating trade and fiscal balances, mounting debt, rising inflation and exchange rate volatility. Confronted with an already weakened macroeconomic environment as a result of an economic slowdown, policymakers face an unenviable dilemma of how to handle the added challenge while using the limited number of macroeconomic instruments available. Despite the well-documented fact that disaster prevention is often less costly to governments than spending on relief efforts, policymakers are

largely in uncharted territory when it comes to integrating crisis and disaster risk reduction into macroeconomic policy.

A. Macroeconomic impacts of external shocks

11. There are fundamental differences between economic crises and natural disasters in terms of their macroeconomic consequences. On one hand, natural disasters destroy property and productive capacity. They represent an adverse shock in the aggregate supply side of the economy. On the other hand, economic crises, such as trade shocks, can rapidly deteriorate terms-of-trade, thus representing an adverse shock in the aggregate-demand side of the economy.

12. Both adverse aggregate demand and supply shocks bring about a decline in GDP, which, in turn, exacerbates the fiscal imbalances. If a natural disaster follows in the wake of an economic crisis, it will compound the fiscal imbalance and add to the fiscal challenge for the government. On the other hand, the impact of adverse aggregate demand and supply shocks on the price level are asymmetrical — disasters create inflationary pressures, while economic shocks can be deflationary.

B. Addressing disaster risk management in macroeconomic frameworks

13. A country's macroeconomic framework, which includes both annual budgets and longer-term public investment plans, must contain a comprehensive disaster strategy, particularly if the country in question is vulnerable to frequent natural disasters. Country experiences suggest some important characteristics of an effective macroeconomic framework. First, the macroeconomic framework should incorporate an explicit disaster strategy. Second, the role of stakeholder participation in national planning and the budgetary process, which is now widely recognized, becomes more pertinent in disaster risk management. Third, successful disaster strategies should include sufficient investment in ex ante disaster risk reduction as well as financial protection against impending disasters. Ideally, an ex ante macroeconomic policy framework should have four distinct components: risk identification; risk mitigation; risk preparedness; and financial protection.

14. In recent years, many high-risk countries have initiated national programmes for disaster risk management within their broader development plans. A common shortcoming of the past approach to risk management in developing countries in the region has been its ad hoc nature and inadequate financing. Many low-income countries have relied essentially on emergency assistance from donors, which often has involved the reallocation of existing loans, grants and project savings.

15. While developed economies place considerable importance on ex-ante financing tools to provide needed post-disaster reconstruction, the use of such tools are largely neglected in many low-income countries. These instruments entail inter-temporal transfers: resources earmarked for spending today to reduce the consequences of an unknown, but probable future event. If the future event does not happen within the expected timeframe, the value of the money spent to protect against the unknown contingency appears lost. Even worse, the perceived benefit of spending the funds on other important investments is also absent. To use ex-ante risk management tools, a policymaker must understand the trade-offs between the cost of risk transfer and self-insurance against possible future negative

consequences. Countries that face high risks to natural hazards cannot ignore ex ante investments in disaster risk reduction, as disasters can wipe out development gains made over a long period of time.

16. The macroeconomic frameworks for many developing economies also suffer from fragmentation and lack of transparency and flexibility. Even if the frameworks include various disaster risk reduction-related expenditures, they are often non-transparent and not well coordinated and their implementation tends to be scattered across ministries and not controlled by an effective central coordinating agency. In many low-income countries, the budgetary and planning process can be rigid and wrapped in bureaucratic red tape, which often affords little flexibility in transferring and reallocating funds across expenditure categories in times of disasters.

C. Building economic resilience to multiple shocks

17. A resilient macroeconomic agenda needs to strike a balance between development and stability. The exact balance depends on individual country specificities. The developing economies of the Asia-Pacific region have recently endured one of the worst global recessions. Compared to other regions of the world, the countries in Asia and the Pacific have shown to be more resilient. While there are some exceptions, healthier fiscal balances, low current account deficits, more flexible exchange rates, stronger financial sectors and large foreign exchange reserves have tended to be the norm. As a result, the majority of developing countries in the Asia-Pacific region have had the “policy space” to adopt supportive fiscal and monetary policies since the onset of the global recession in 2008. It is important to have policy space in the aftermath of any shock, either a natural disaster or an economic crisis.

18. Even though prudential macro management that gives rise to policy space is essential, it does not mean rigid adherence to mechanical targets for key macro variables, such as inflation, interest rates and the fiscal deficit. These targets should be interpreted flexibly based on a country’s circumstances. Faced with the “new normal” of multiple shocks, the macroeconomic policy agenda of low-income countries should not be overly subordinated to a mechanical interpretation of macroeconomic prudence; it should be guided by the goals of long-run economic development and poverty reduction while achieving short-run economic stability.

19. Macroeconomic reforms alone will not be adequate to build resilience. They need to be supplemented by structural reforms to boost production, create employment, establish disaster prevention measures and reduce social vulnerability. Structural reforms should also be designed as a means of providing a solid social foundation and sustained economic security, which, in turn, will build long-term resilience to multiple shocks.

20. Many low-income countries may not be able to achieve resilience without assistance from development partners. Providing prompt external assistance to economically vulnerable low-income countries hit by shocks is crucial. For countries with special needs, grants should be considered; even highly concessional loans may be a heavy load.

III. Building resilient communities

21. Global economic crises and natural disasters have a disproportional adverse impact on disadvantaged communities. Poor and marginal segments of societies often have fewer and less effective buffers to shield themselves from these external shocks, which therefore exacerbate the link between poverty and vulnerability. Their coping mechanisms often take the form of cutting back on meals, pulling children out of schools, high indebtedness and sale of assets, pushing them into a vicious cycle of poverty deprivation.

22. There is, however, strong evidence that communities and their most vulnerable segments learn from past adversities and bounce back stronger and better prepared to handle future shocks. Communities that are characterized by social capital and norms of reciprocity and trust are often seen to be more resilient during disasters. Nevertheless, not all communities have an intrinsic resilience mechanism. In certain cases, their coping responses are “erosive” in nature and, as such, can push them further into a vicious circle of poverty. Governments need to work closely with communities and provide them with an enabling environment to build their inherent resilience. This can be achieved by building their capacity to reduce exposure and vulnerability and to endure and recover from external and non-preventable shocks.

A. Who is most vulnerable to multiple shocks?

23. Economic crises and disasters hurt poor and vulnerable people the most. Poverty is complex and multidimensional. It is associated with hunger, lack of shelter and poor living standards, malnutrition, limited education or skills and job insecurity. The poor often are restricted to a limited set of opportunities and choices, preventing them from realizing their potential. Disasters and shocks, such as economic crises, exacerbate existing social and economic imbalances, which can further marginalize the poor and excluded.

24. Among the poor, the socially excluded individuals and groups suffer disproportionately from disasters and economic crises. The same groups of individuals are repeatedly affected. Such groups include women, elderly, children, people with disabilities, migrants and informal workers.

B. What makes communities resilient?

25. Community resilience to external shocks emerges from three sets of adaptive capacities: inclusive development; social capital; and community empowerment. Economic development has to do with the level and diversity of economic and financial resources, the equity of their distribution and measures to mitigate social vulnerabilities and reduce risk to shocks. Social capital is the bond of trust and reciprocity that creates long-lasting relationships. Community empowerment has to do with collective action and skills for solving problems and making decisions collectively.

26. Five interrelated strategies that are commonly applied in many community success stories enable and reinforce economic development, social capital and community empowerment:

(a) *Social protection* is essential for addressing poverty and removing underlying factors of vulnerability. In that regard, a universal social protection floor may not be sufficient for building resilience. Given

the unpredictability and complexity of future risks, a social protection system should already be in place during normal times, saving the need to use singular interventions as part of the response mechanism. These measures should be sustained during shocks along with other public spending on critical social sectors. Temporary crisis response measures need to be followed up with longer-term poverty reduction measures in order to achieve maximum effectiveness. With such interventions, the poor can better protect their assets and livelihoods, enabling them to build resilience to multiple shocks.

(b) *Risk sharing* is not widely used. Some successful country experiences, however, show that microinsurance, a form of risk sharing, can offer the poor financial protection against a variety of shocks. Risk sharing within a community-based structure can also empower communities with the capacity to take ownership and leadership of recovery efforts.

(c) *Governance* is important for supporting local action and response, engaging vulnerable groups in decision-making and promoting participation and communication channels. Decentralizing authority from central to local governments has a positive impact on community resilience, but to be effective, adequately trained officials, transparent and accountable governance systems and sufficient resources are required. In the absence of these conditions, rent-seeking activities can negate the gains from decentralization and can lead to benefits in the hands of a few.

(d) *Partnerships* at the community level are a critical factor in restoring local connections during a shock and thus contribute to the resilience of a community. Multiple and sequential disasters push communities to prepare for potential disasters and crises as part of a survival strategy, and strong ties with civil society organizations have shown to be effective in building community capacity.

(e) *Communication* – or the production and dissemination of information – is a powerful tool for building community resilience from a disaster preparedness perspective. It also can serve as an early warning and response management coordination mechanism. Due to technological development, a wide variety of information and communication technologies (ICT) enable the sharing of information within and between communities, governments and supporting organizations. ICT are also an important mechanism for maintaining and re-establishing business networks during recovery stages.

IV. Protecting supply chains

27. Globalization has transformed business environments worldwide, particularly in the fast growing Asia-Pacific region. The integration of global value chains has made it possible for many Asia-Pacific economies to establish strong manufacturing bases and benefit from increased exports. This development, however, could potentially increase economic vulnerability through higher exposure to direct and indirect effects of natural disasters. Recent natural disasters in Japan and Thailand demonstrate that any disruptions to a single point of production may lead to a breakdown of the entire production chain and significantly affect the production and export performance of all countries in the production networks. Measures are needed to mitigate the risks of economic vulnerability arising from disruption in the global supply chains.

28. Apart from the damage to manufacturing production hubs, disruptions to value chains seriously affect the agriculture sector, resulting in rising food prices and devastating impacts on food security. Recent examples of this were large-scale disruptions to the agricultural supply chains that were triggered by the floods in Pakistan and heat waves in the Russian Federation in 2010 and the floods in South-East Asia in 2011.

Building supply chain resilience

29. Despite the increasing vulnerability to natural disasters brought by growing global interdependence, supply chains will continue to grow as ongoing globalization drives markets to open further. In the light of the increasing complexity of the Asia-Pacific supply chains, the economies of the region should emphasize the development of a risk-based approach for strengthening the resiliency of the supply chains together with their trading partners outside the region, whereas governments at all levels should play a fundamental role in coordinating and mainstreaming risk reduction strategies.

30. A collective effort involving the public and private sectors is needed in order to effectively address the risks and build resilience to natural disasters. Collaboration between these sectors can improve the ability of global supply chains to prepare for, respond to and recover from disasters. It can also help identify interdependencies and enable the utilization of each other's resources in advance for the purpose of disaster risk reduction. These actions will result in more resilient supply chains.

(a) Firms need to be aware that institutional capacities in natural disaster resilience and business continuity are strong determinants of long-term competitiveness. Small and medium-scale enterprises (SMEs), in particular, must have a clear understanding of this as in many countries they are the backbone of their economies and account for the majority of the employed workforce. Unlike large and multinational firms, SMEs usually lack cash reserves and a backup location for operation. Firms should also seek ways to transfer risks and reduce variability through insurance markets. In the absence of insurance protection, businesses could rely on savings, assets, emergency loans, kinship and voluntary mutual arrangements. One option could be to create inventory buffers, which mitigate the effects of disruptions.

(b) Governments can reduce disaster exposure and vulnerability in the global supply chain by supporting diversified economic structures and energy sources, rational urban planning, stricter building codes and coherence between urban and infrastructure planning. In addition, the ability to restore critical infrastructure largely determines the pace of recovery. It is important to reach out to SMEs and encourage them to prepare before the next disaster strikes. Ex-ante actions can significantly reduce the expense associated with and need for post-disaster recovery and government-led relief, which may include measures, such as financial assistance, employment support, and the facilitation of business recovery.

31. The provision of insurance is a potential area for public-private partnership. Insurance not only provides compensation for disaster damage but also encourages disaster preparedness. Insurance markets that cover these damages and help businesses recover from a disaster is a prerequisite for resilient supply chains. On the supply side, governments could explore cooperation with private insurance providers to develop natural disaster risk transfer and insurance schemes by sharing the risks and facilitating

underwriting or compensation processes. On the demand side, compulsory requirements may be implemented to encourage supply chain members to conduct disaster risk transfer.

V. Minimizing the exposure of critical sectors

32. Inherent vulnerabilities in certain critical sectors could either cause a crisis or act as transmitters of a localized crisis to a larger system. The financial sector is sensitive to shocks and also uniquely prone to systemic failures because it functions first and foremost on the trust and confidence of financial actors in the system. Similarly, having safeguard measures are crucial for some critically important infrastructure, such as schools, hospitals and community buildings, major supply roads, bridges, power, water systems and crucial communication lines, so that they do not fail during natural disasters. Finally, tremendous pressure is put on land and water, as the unprecedented growth of populations, economies and cities in Asia and the Pacific is exposing economic systems and societies to increased risk of food insecurity, water scarcity, possible basic resource scarcity and exposure to natural hazards.

A. Financial sector

33. The financial sector is key in terms of its inherent vulnerability to shocks and its propensity to transmit shocks to the entire economy and across borders. Any holistic strategy aimed at disaster resilience building will therefore need to address as a priority this sector's inherent tendency to fluctuate between boom-and-bust cycles.

34. Each financial crisis gives new impetus for discussions on how to build safer and more robust financial systems. Lessons learned from past crises point to the need to address both preparedness and recovery to shocks. Measures that address preparedness refer to actions to make the dynamics of financial markets more stable and less volatile. Such measures are geared at:

(a) *Increased transparency, better financial market surveillance.* Lack of transparency, poor accounting standards and limited understanding of financial instruments have made the task of understanding risk exposure very difficult. The depth of private sector debt during the 1997 financial crisis in South-East Asia, the real sovereign debt levels in a number of European Union countries in 2011 and the magnitude of securitized assets, including over-optimistic assessments of the subprimes in 2008, are examples of incomplete information, incorrect risk assessments and malfunctioning of early warning interventions and automatic corrections. Thus, there is the need for increased market surveillance, including in developing countries.

(b) *Reforming the financial sector regulation.* Regulating the international financial sector is a complex task that takes a long time. One of the key mechanisms through which this has been pursued is the Basel Accords, which is aimed at making the banking sector less vulnerable through a number of micro-prudential (individual bank level) and macro-prudential (banking sector level) measures. In this regard, an issue that has come under increased scrutiny is the growing share of credit intermediation carried out by non-banking entities, also known as "shadow banking". While such activities form part of the markets innovative financing mechanisms, they do not come under the same prudential rules as the banking sector, and involve higher levels of risk taking. Overall, there is a need for some degree

of harmonization across regulatory arbitrage through which risk-taking entities move from more to less regulated jurisdictions.

(c) *Capital account controls and regulations.* In recent years, capital markets have been highly volatile, with the Asia-Pacific region experiencing surges in capital inflows that have arisen from the liquidity glut in developed countries. While countries have tried to manage the resulting exchange rate volatilities by accumulating foreign exchange reserves, they have concurrently sought to implement additional measures to manage their capital accounts. The continued surge of inflows, however, may require additional measures that would need to be targeted at the types of flows involved and aimed at improving the quality of flows received.⁷

35. An adequate framework can help reduce the likelihood of major shocks on the financial sector, but governments also need to be prepared to intervene as a shock is occurring to limit the damage. This typically involves rescuing the banking sector. These measures may help reset the financial sector back on its normal business path, but still a key concern is the issue of “moral hazard”. Interestingly, when the financial 2008 crisis affected Asia and the Pacific, contrary to what might have been expected given the bailouts during the 1997 Asian financial crisis, the banking sector of the region proved that past events need not continue to recalibrate operations towards risk taking. It had, for the most part, incorporated lessons learned from the financial crisis of 1997, built resilience and thus showed remarkable resistance to the 2008 financial crisis.

B. Critical infrastructure

36. The rapid economic development in the region has led to a phenomenal increase in exposure of critical infrastructure to natural hazards. As a result, disaster impacts have been quite severe on critical infrastructure, which includes the social sector, comprising education, health, housing and shelters, and the physical sector, comprising energy, transport, water management and irrigation, water supply and sanitation, and ICT. This is the primary reason behind the economic losses due to disasters in the region. Key policies on protecting critical infrastructure are:

(a) *Build awareness of existing knowledge and good practices.* A large body of research and many technical manuals on infrastructure resilience improvement policies and building know-how exists, but there is limited awareness about this wealth of knowledge. Awareness building about the existing knowledge by targeting key professionals, policymakers, technicians and politicians as well as the private sector would be an important step forward.

(b) *Integrate the disaster risk management approach for building resilience to critical infrastructure.* This requires an understanding of risk for effective planning and integrating disaster mitigation measures in policy formulation, laws, regulations and institutional arrangements. Mapping the critical infrastructure at risk, which is quite dynamic and requires innovative technologies, is an important part of this process. Disaster risk management should be mainstreamed in the infrastructure development programmes. In this respect, governments should review their policy and regulatory framework, promote catastrophe risk insurance and develop a strategy that

⁷ *Economic and Social Survey of Asia and the Pacific 2012: Pursuing Shared Prosperity in an Era of Turbulence and High Commodity Prices* (United Nations publication, Sales No. E.12.II.F.9).

addresses risk reduction measures and operations to protect critical infrastructure.

(c) *Review standards, codes and guidelines for relocation.* The absence of (or poorly enforced) construction regulations has resulted in poor quality infrastructure. Thus, it is important to review and develop new design standards, codes and construction guidelines for critical infrastructure. Incorporating new standards is relatively easier during the planning stage as, at this point in a project, the additional investment required is quite low. In many cases, it may be more cost-effective to design relatively large infrastructure with higher standards, such as bridges, flood protection walls, river training works, dams, high rise buildings and slope protection walls, prior to construction rather than retrofitting after construction.

(d) *Recognize the cost effectiveness of building resilience of critical infrastructure.* Risk management investments have proven to be more cost-effective when targeted to critical infrastructure rather than being spread widely over many risk-prone assets. The ratio of benefits to costs is far more attractive when 20 per cent coverage of mitigation cost is attributed to building resilience to the critical infrastructure, such as retrofitting works in high-risk areas. Investment in building resilient infrastructure has long-term benefits and saves on recovery costs associated with disasters as well as safeguards communities and protects life.

(e) *Capitalize on resilient land use planning that has largest ratio of benefit to cost.* Studies suggest that land use planning and improved building standards generate the largest ratio of benefits to costs (approximately 4 to 1). These measures can be even more attractive when taking into account the political and economic benefits from avoiding loss of life and injury, decreasing poverty and increasing human development.

(f) *Use the opportunity of stimulus packages for building resilience in the critical infrastructure.* In response to global financial and economic crises, several countries have created large economic stimulus plans and strategies that include investment in major infrastructure projects. The investment in infrastructure, as a part of the stimulus package, provides a unique opportunity for the integration of a disaster risk management approach in the design and construction of the infrastructure in addition to helping to build long-term resilience to shocks.

C. Link between land, water and energy

37. Some of the most significant and severe risks faced by the region in terms of the likelihood of occurrence and the severity of the impact are related to food crisis, water supply crisis, energy and food price shocks and climate change.⁸ Increased pressure on environmental resources, especially land and water, and the use of fossil fuels, are at the core of these risks.

38. The fundamental concern is that our economic system, and the need to constantly produce more goods and services, is pushing the region towards a threshold that could result in a catastrophic ecosystem collapse, resulting in serious cascading impacts on economies and societies.

⁸ World Economic Forum, *Global Risks 2013*, 8th ed. (Geneva, 2013). Available from www3.weforum.org/docs/WEF_GlobalRisks_Report_2013.pdf.

39. Land and water is already scarce for many in the region. A growing population combined with competing needs from industry, land degradation, unsustainable water extraction and pollution could lead to even greater food and water security problems if not addressed now.

40. Likewise, economic growth has been closely aligned to energy consumption, particularly fossil fuels. Many of these resources are dwindling, creating the need to find alternative sources of energy, some of which are much more resource intensive to extract than reserves extracted historically. There is a risk that this will ultimately lead to energy price shocks being the new standard that the world will need to adjust to.

41. Compounding all of these issues is climate change, which many already believe is having a dramatic impact on some countries, and could exacerbate the water and food scarcity problems. Consumption of fossil fuels has been one of the underlying causes.

42. Building resilience into environmental systems requires improving the efficiency of economic systems to ensure that less environmental resources are used, and diversifying economic and social systems to reduce an over-dependence on individual environmental resources. This, in turn, reduces the pressure on the environment systems and limits the impacts on these systems in the event of an ecosystem failure. Finally, communities and economic systems need to be prepared to adapt rapidly, and potentially drastically, in the event of a catastrophic environmental change. Measures to accomplish these objectives include:

(a) *Awareness raising and stakeholder involvement.* Inclusive and collaborative stakeholder involvement and awareness-raising at all levels are critical to any development approach to build resilience to shocks. Lessons learned from country examples highlight that effective adaptation strategies build on existing livelihoods to the extent possible and take into account the existing knowledge and coping strategies of the poor. This coupled with close engagement of governments and researchers help builds the capacity of local communities to adapt to sustainable practices. Beyond agriculture and land management, awareness-raising among consumers is important for limiting the consumption of valuable resources.

(b) *Placing a value on natural resources.* Higher initial costs are major concerns underlying many arguments for resource efficiency. However, similar to most other sectors, a life cycle analysis reveals that investing in prevention will result in much higher long-term gains. For example, energy efficiency has the potential to build resilience with respect to energy use, as one unit of energy saved by the end user multiplies back to three, or possibly more, units of energy that does not need to be produced due to losses across the energy supply chain. Fuel subsidies are also a considerable drain on national economies and often do not benefit those who need them most. Funds from subsidized resources can be better utilized in a manner more targeted towards the social or economic group the government aims to support. Placing the right price on the use of basic resources, such as water and energy, is one of the most effective tools to discourage wasteful use.

(c) *Land-use planning and management.* Managing the way land is used and planned, particularly for urban development, is key to building sustainable societies that use resources efficiently. The way cities are planned and built lock societies into efficient or wasteful consumption patterns for generations to come. Likewise, managing agricultural land in a

sustainable manner will build long-term food security. Natural ecosystems, such as forests, should also be maintained and managed in a sustainable manner as they provide critical services to societies that are often overlooked, including reducing exposure to natural disasters and water purification.

(d) *Technology and innovation.* The role of technology, research and innovation should not be underestimated. The application of technologies will be critical to both improving the efficiency of resource use and diversifying economic and resource consumption options. New technologies are under development in recognition of resource constraints and many, which were not originally viable, have become much more mainstreamed, particularly with some initial government support. Space technologies, especially remote sensing and geographic information systems, have proven to be effective in addressing environmental degradation, and are more affordable than ever. Despite this, only a few countries in the region have significantly benefited from them as lack of awareness and capacity hinders broad-based application of these technologies.

(e) *These strategies need to be supported by strong policies and regulation.* Often, individual short-term benefits outweigh the long-term common good of maintaining a healthy ecosystem, which ultimately is required for sustainable development. Governments at the highest level need to set policies and a vision that recognizes the importance of their natural resources with regard to long-term economic and social development. Notably, these policies will only be effective if supported by strong administration, monitoring and enforcement.

(f) *This all requires good adaptive governance.* Adaptive capacity is the ability of a system to recover from shocks and reform system functions and feedbacks without losing its ability to carry out the task for which it has been designed. Many governments have already established policies, regulations and institutions that respond to existing environmental threats, yet the weakness of these is the cross-cutting nature of these issues, resource constraints and possible future climate change impacts. There is now a shift by some countries to establish institutions at the highest level that cuts across various sectors and is more integrated into basic development policies.

VI. Building resilience through regional cooperation

43. Enhancing regional cooperation is an essential component of building resilience as countries are increasingly faced with economic crises and natural disasters that have cross-border impacts. Having in place a mutually reinforcing strategy to build resilience and share lessons learned, practical knowledge and experiences across countries and subregions is therefore of paramount importance.

44. The Asia-Pacific region has set up some regional cooperation mechanisms that deal with natural disasters and economic shocks. These mechanisms are at various stages of development and, in most cases, they do not have resilience built in. In order to strengthen resilience to natural disasters and economic shocks through regional cooperation in the region, the following recommendations could be considered:

(a) *Regional policy coordination.* A solid political socioeconomic framework of cooperation between governments is required to facilitate and

move forward cooperation among countries at the subregional or regional level. For example, regional coordination of financial and monetary policies before, during and after economic shocks should be promoted to protect the region against a range of economic and financial risks. Regional coordination of financial sector policies would also diversify risk across countries and increase growth. Similarly, regionally coordinated monetary and fiscal policies, through scale effects, can shore up confidence, lead to multiplier effects, and help countries insulate themselves from shocks.

(b) *Regional pooling of resources and systems for effective monitoring and early warning.* People-centred early warning systems are recognized as an integral component of disaster risk reduction, adaptation to climate change and building resilience to disasters. A regional system that covers the hazardous areas more comprehensively and cuts across the geographical boundaries would sharply improve the effectiveness of early warning systems. The establishment of such a system requires regional cooperation through the sharing of data, exchanging information and practices and integrating national systems. Governments, development partners and donors should commit to further strengthen and expand regional multi-hazard monitoring and early warning systems, such as the integrated regional early warning system for tsunami, coastal hazards and climate preparedness. An evaluation conducted in 2011 concluded that the ESCAP Multi-Donor Trust Fund for Tsunami, Disasters and Climate Preparedness in Indian Ocean and Southeast Asian Countries, had made a significant contribution to the establishment of an Indian Ocean tsunami early warning system. It is estimated that this system will contribute to saving about 1,000 lives every year for the next 100 years. Similarly, member States should also strengthen regional monetary and financial monitoring and surveillance, building upon the lessons learned from setting up such a mechanism under the ASEAN+3 framework and the Executives' Meeting of East Asia and Pacific Central Banks, and consider establishing a regional platform that would provide a cohesive monitoring and surveillance mechanism. Such a mechanism would act as a type of "early warning system" for economic shocks.

(c) *Regional pooling for better preparedness.* Preparedness is critical in building resilience to disasters. Governments should be better prepared to respond to disasters and crises and extend assistance to affected countries through regional cooperation. The ASEAN Coordinating Centre for Humanitarian Assistance is an example of the type of subregional mechanism required. Countries participating in the Regional Space Applications Programme for Sustainable Development of ESCAP and cooperative mechanisms, such as Sentinel Asia, may wish to offer free access to near real-time satellite data and information products in support of response and relief, as well as preparedness. Similarly, another necessary component of preparedness is to have in place regional contingency plans that include the scale and speed needed to address liquidity and capitalization problems of banks during financial crises. Regional coordination of the lender of last resort function should be further considered as amply demonstrated by the liquidity and capitalization crisis faced during the 1997 crisis.

(d) *Regional pooling of risks.* An efficient approach to addressing disasters, in particular those with cross-border effects, is to cooperate regionally and pool resources for risk financing. Building on the experience of the Caribbean subregion, the Pacific island countries have launched a pilot regional insurance pooling initiative. As a group, the premium for the coverage has been reduced significantly. Countries that are faced with

common hazards in other subregions should adapt similar regional cooperation schemes in risk financing. Similarly, the 1997 crisis underlined the need for greater regional financial cooperation to provide liquidity support during economic crises. A coordinated regional approach as the lender of last resort could play a key role in building resilience to economic and financial crises through the extension of emergency liquidity support during financial crises and protect against sudden reversals of capital flow.

(e) *Bridging regional cooperative mechanisms and initiatives.* ESCAP could serve as a bridge to bring together regional cooperative mechanisms that have similar expertise and mandates. For example, the ESCAP/WMO Typhoon Committee and Panel on Tropical Cyclones are working to reduce the risk of disaster caused by tropical cyclones in different subregions. The pooling of expertise and resources will help narrow the technical and resource gaps that may be difficult to address without pooling. With regard to the financial sector, significant progress towards regional financial cooperation has been achieved since 1997. Despite this, existing financial cooperation initiatives could be further strengthened through continued reform that includes bridging the mechanisms set up, notably the Chiang Mai initiative, to include other subregions, and adopting practical measures that streamline decision-making and implementation processes for better responsiveness. Existing legal and regulatory frameworks should also be harmonized in order to make regional cooperation, financial integration and trade integration at the regional level more effective as key elements for building regional economic resilience.

(f) *Synergizing regional initiatives.* Regional organizations and cooperative mechanisms in Asia and the Pacific could share knowledge and good practices with each other. ESCAP could furnish 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 between members of the Association of Southeast Asian nations (ASEAN) and the South Asian Association for Regional Cooperation, as well as with other regional organizations in other subregions of Asia and the Pacific. The Asia-Pacific Regional Coordination Mechanism, chaired by the Executive Secretary, could bring additional valuable expertise and synergy.

(g) *Reducing risks and uncertainties through exchanges of data and information regionally.* The Asia-Pacific region has a wealth of information and experience in mainstreaming resiliency aspects and disaster risk reduction into development. ESCAP can provide a regional forum for the sharing of knowledge and learning about good practices in the following areas:

- (i) Building the resilience of local communities by addressing the inter-linkages between social protection, disaster risk reduction and climate change adaptation and long-term development and poverty reduction strategies;
- (ii) Integrating resiliency aspects into development sectors of strategic importance, such as critical infrastructure and critical natural resources, in long-term multi-sectoral development planning;
- (iii) Building resilience of supply chains and trade to natural disasters and economic crises that cut across boundaries;

- (iv) Better preparedness at all government levels and across all sectors for multi-sectoral resilient recovery and reconstruction.

45. Governments should firmly commit to strengthening the existing regional framework and cooperative mechanisms in disaster risk management and cooperate in developing risk reduction and climate change adaptation strategies across all sectors. The Committee on Disaster Risk Reduction would provide the intergovernmental platform for ESCAP members and associate members to deliberate and build a regional voice on global issues pertaining to disaster risk management and preparation for the development agenda beyond 2015.

46. Similarly, other intergovernmental bodies, especially the Committee on Macroeconomic Policy, Poverty Reduction and Inclusive Development, could provide a forum for intergovernmental discussions on regional financial cooperation. Inputs from the forum could be used for creating the framework for building regional resilience to economic crises. The Committee could also provide a platform for countries to build a regional voice to make the international community aware of the need to build a more resilient and development-friendly international financial architecture. In that connection, important proposals outlined by ESCAP include: (a) establishing a special drawing rights-based global reserve currency that could be issued counter-cyclically; (b) a global tax on financial transactions which, apart from moderating short-term capital flows, would raise resources for achieving the Millennium Development Goals; and (c) international regulations to curb excessive risk-taking by the financial sector.

47. Building resilience to natural disasters and economic shocks requires mainstreaming disaster risk management into long-term development strategies at all government levels and across all relevant ministries, including the planning and finance ministries. It also calls for strong political will and leadership with regard to protecting lives and economic assets from disasters and addressing subsequent shocks that cut across boundaries. In that connection, ESCAP can provide a regional platform for addressing the building of resilience to natural disasters and multiple shocks.

48. Building regional resilience also entails the capacity to shape global actions. ESCAP member States are at the receiving end of economic crises and should forge a stronger, coordinated regional voice on issues of global governance, including global financial architecture, using the Commission as a platform to move the global agenda forward.