

# 13 CLIMATE ACTION



Take urgent action to combat climate change and its impacts

## I. SUMMARY

Climate change and associated disasters fundamentally threaten development in Asia-Pacific and disasters disproportionately burden the poor and the most vulnerable groups. The Asia-Pacific region is home to 6 of the top 10 global carbon emitters, contributing to over half of the world's total greenhouse gases (GHGs) and is highly vulnerable to climate-induced disasters and extreme weather events and the risk profile will continue to be altered by climate change in the next decades. Addressing the impacts of climate change, implies dealing with the increased variability, intensity and frequency of extreme events. Increased incidence and intensity of heatwaves, dust storms, floods and droughts call for enhanced modelling capabilities to better assess climate change and disaster risks. Global warming scenarios project that a temperature increase beyond a 1.5°C would exacerbate the impacts already observed in the region. Asia is home to four-fifths of people who will face flooding if there is a 3°C rise in global temperatures.<sup>1</sup>

## II. CURRENT STATUS

- Goal 13 on climate action is unlikely to be met at the current rate of change<sup>2</sup> and all ESCAP subregions are off track on SDG 13. East and North-East Asia and South and South-West Asia, in particular, have regressed on meeting targets during 2010 and 2017.

<sup>1</sup> World Economic Forum, *The Global Risks Report 2019*, 14th ed, (Geneva, World Economic Forum, 2019).

<sup>2</sup> Based on a recent regional ESCAP analysis of the status of SDG achievement, available from <http://www.unescap.org/stat/data> and ESCAP, *Asia and the Pacific SDG Progress Report 2017* (Bangkok, United Nations, 2018).

This goal profile has been developed by:



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- While 50 per cent of stakeholders perceived that good or very good progress has been made in achieving SDG 13, only two out of the eight indicators under the Climate Action Goal<sup>3</sup> are being tracked due to the lack of regional data. Improvements in data collection are expected in the coming years as countries enhance their reporting through the Sendai Framework Monitoring System.
- The region is highly vulnerable to the effects of climate change and highly exposed to natural hazards. Flooding is one of the most pervasive recurrent shocks, with some 35 per cent of floods in the region affecting South Asia between 1970 and 2016; in August 2017 alone, intense monsoon rains affected 40 million people in Bangladesh, India and Nepal, claimed nearly 1,300 lives and put 1.1 million people in relief camps. Floods could cost the subregion as much as US\$215 billion each year by 2030.<sup>4</sup>
- Asian economies accounted for two-thirds of the global increase in carbon emissions in 2017, and coal-fired electricity generation in Asia accounted for the largest increase in coal demand globally. Increases in carbon emissions came chiefly from power generation, industry (especially steel and cement), transport, and construction in China, India, Indonesia, Japan, and Republic of Korea.

## A. AREAS WHERE GOOD PROGRESS IS MADE

- **Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters (target 13.1).**

Asia-Pacific governments are undertaking concerted efforts to strengthen preparedness mechanisms and establish an enabling policy environment for managing disaster risk. At least eight countries in the region formally reported<sup>5</sup> considerable progress on aligning their disaster risk reduction (DRR) strategies with the Sendai Framework for Disaster Risk Reduction between 2015 and 2017.<sup>6</sup> A total of 36 out of 39 surveyed countries in the region have a national DRR guiding document (e.g. strategy, policy, plan and/or framework). Countries are investing in revising their strategies to address the prevention of new risk, reduce existing risks and strengthen resilience beyond disaster-response and/or recovery. Afghanistan is the latest country in the region to adopt a Sendai-aligned DRR policy in December 2018.

Eleven countries have reported the existence of local disaster risk reduction plans among 5,869 local governments in 2017. Over 200 cities in the region have assessed their local resilience using the UNISDR Disaster Resilience Scorecard. The Philippine National Resilience Council has customized the scorecard to their national development plan, and cities are working on developing a City Disaster Insurance Pool to enhance local resilience.

- **Integrate climate change measures into national policies, strategies and planning (target 13.2).**

The majority of countries in the region<sup>7</sup> have carried out climate change vulnerability and impact assessments, to inform adaptation planning and incorporate climate risk into national and sector planning, including through National Adaptation Plans (NAPs) and Nationally Determined Contributions (NDCs).<sup>8</sup> All countries apart from Iran, Kyrgyzstan, the Russian Federation and Turkey have ratified the Paris Agreement and submitted their Intended Nationally Determined Contributions (INDCs) or Nationally Determined Contributions (NDCs).<sup>9</sup> The Marshall Islands was the first country globally to submit a second, more ambitious NDC<sup>10</sup> and some countries have adopted more stringent targets or announced new commitments when converting their INDCs to NDCs,

3 ESCAP, *Statistical Yearbook for Asia and the Pacific 2017: Measuring SDG progress in Asia and the Pacific: Is there enough data?* (Bangkok, United Nations, 2017).

4 ESCAP, Asian Development Bank, and United Nations Development Programme, *Transformation towards sustainable and resilient societies in Asia and the Pacific* (2018).

5 The three indicators of the SDG Target 13.1 are aligned with the indicators of Sendai Framework Targets A, B and E.

6 Data on indicator E-1 from the Sendai Framework Monitoring. The average of self-scoring (0-1) increased from 0.32 in 2015 to 0.56 in 2017 indicating better integration of the 10 core elements of Sendai alignment in strategic documents.

7 Unless stated otherwise, the geographical scope refers to ESCAP member States in the region for the purposes of this paper

8 UNDP, *Regional briefing on National Adaptation Plans: Asia-Pacific in focus* (2017).

9 A country's INDC is converted to an NDC when it formally joins the Paris Agreement through a process of ratification, acceptance, approval or accession. Brunei Darussalam and the Philippines have requested that their INDCs are not converted to NDCs upon ratification. ESCAP's associate member of Niue has submitted an NDC.

10 The second NDC sets a more ambitious GHG reduction target of at least 32 per cent below 2010 levels by 2025 and at least 45 per cent below 2010 levels by 2030. See the interim NDC Registry at <https://www4.unfccc.int/sites/NDCStaging>



including Indonesia, Nepal, Pakistan and Sri Lanka.<sup>11</sup> Overall, country contributions from the region focus on energy, agriculture, transport, waste, land use and land use change, forestry and industry. Notable actions to reduce emissions beyond NDC commitments, are taken in the transport sector: India has set a target for a 30 per cent share of electric vehicles in 2030; China launched a multi-ministerial effort to expand ethanol usage (10 per cent nationwide); and Indonesia introduced tax incentives for smaller-sized cars.<sup>12</sup>

The majority of (I)NDCs in the region<sup>13</sup> integrate adaptation or resilience or refer to adaptation plans and policies. Adaptation has been integrated into national level planning to some extent, both in terms of development planning and specific climate change and/or adaptation plans and policies.<sup>14</sup> To date only two developing countries from the region have submitted NAPs to the UNFCCC (Sri Lanka and Fiji).

- **Improve education, awareness-raising and human and institutional capacity (target 13.3).**

Twenty-five countries in the region have developed disaster loss and damage databases that track disaster impacts and inform early warning.<sup>15</sup> Efforts are underway to develop a regional alert system for sand and dust storms.<sup>16</sup> Regional mechanisms exist<sup>17</sup> to support low-capacity countries to improve their early warning services. At least 15 countries in Asia-Pacific have institutionalized the national climate outlook forums which bring together producers and users of climate information to develop preparedness plans based on seasonal outlooks. Regional climate outlook forums have been regularly convened in the Pacific, South and South-East Asia. Earth observation-based drought monitoring and early warning systems have been operationalized in Mongolia, Myanmar and Sri Lanka.<sup>18</sup> Promising innovations in early action triggered by early warning systems have been piloted in six countries in the Asia-Pacific region. Concretely, Bangladesh, Mongolia, Nepal, Philippines, Solomon Islands and Viet Nam have initiated forecast-based financing programmes to access funding for early action and response preparedness based on forecast and risk analysis.

- **Improving climate finance flows (target 13.a).**

Public finance for climate action in the Asia-Pacific region has been accelerating, rising by 21 per cent over the period 2012-2015, to reach around US\$19 billion in 2015. Of this, roughly 30 per cent of finance for climate action was channelled as bilateral official development assistance (ODA), 64 per cent through multilateral ODA, and 6 per cent through dedicated climate funds.<sup>19</sup>

Between 2004 and 2017 “US\$3.8 billion has been approved by 17 multilateral climate funds and initiatives for 422 projects and programmes.” Despite the range of available funds, climate financing in the region is concentrated in a few countries; Bangladesh, China, India, Indonesia and Viet Nam are the top five recipients. Moreover, there is some imbalance in the allocation with around one third of funding allocated to adaptation, one tenth to reducing forest-related or crosscutting initiatives, and the majority going to mitigation activities.

## B. AREAS REQUIRING SPECIFIC ATTENTION AND ASSOCIATED KEY CHALLENGES

- **Reducing climate and disaster impacts on people in the region (target 13.1).**

Between 2015 and 2018, 18 countries (16 in Asia and 2 in the Pacific) reported through the Sendai Framework Monitor<sup>20</sup> that 18,587 people died or were missing due to disasters and 36.2 million people were directly

11 World Resources Institute, “INSIDER: What’s Changing As Countries Turn INDCs into NDCs? 5 Early Insights”, 2018. Available from <https://www.wri.org/blog/2018/04/insider-whats-changing-countries-turn-indcs-ndcs-5-early-insights>.

12 IEA, *World Energy Outlook 2018* (Paris, IEA, 2018)

13 The (I)NDC of Kazakhstan, the Russian Federation and New Zealand do not refer to adaptation, resilience or disaster risk. Turkey and Australia’s communicated contributions reference national adaptation strategies and plans. See the interim NDC Registry and INDC Registry <https://www4.unfccc.int/sites/NDCStaging>; <https://www4.unfccc.int/sites/submissions/INDC> and the IGES NDC Database (v6) at <https://pub.iges.or.jp/pub/iges-ndc-database>

14 UNDP (2017), see footnote 8.

15 Based on <https://www.desinventar.net> and other national databases.

16 ESCAP, “High-level UN conference on disaster information management and combating sand and dust storms opens in Tehran”, 2018. Available from <https://bit.ly/2TnNSNd>.

17 Such as the ESCAP Tsunami and Climate Preparedness Trust Fund and the Regional Integrated Multi-Hazard Early Warning System for Africa and Asia (RIMES). Information available from <https://www.unescap.org/disaster-preparedness-fund>; <http://www.rimes.int>

18 ESCAP, “Drought Watch System in operation in Mongolia”, video, 2019. Available from <https://www.unescap.org/multimedia/droughtwatch-system-operation-mongolia>

19 ESCAP, *Finance for Climate Action in Asia and the Pacific: A Regional Action Agenda to Access Debt Capital Markets*, (Bangkok, United Nations, 2017).

20 The Sendai Framework online Monitoring tool is available from <https://sendaimonitor.unisdr.org/>



affected during the same period. While there is a noted decline in disaster-induced mortality due to enhanced preparedness, disaster impacts are outpacing the region's economic growth and contribute to intergenerational poverty and in equality.<sup>21</sup>

EM-DAT<sup>22</sup> recorded the occurrence of 624 disaster events from 2015 through 2018 that resulted in around 35,000 deaths and affected more than 580 million people, seriously disrupting societies, their development assets and livelihoods. This accounts for over 61 per cent of global disaster mortality and around 76 per cent of affected people. Hydrometeorological hazards accounted for 83 per cent of disaster occurrences and resulted in 55 and 98 per cent of mortality and affected people in the region, respectively. While economic losses are underreported, the cumulative impact of low-severity, high-frequency disasters is often not reflected in disaster loss accounting systems.<sup>23</sup>

Between 2015 and 2017, 32.4 million new disaster displacements were recorded in the Asia-Pacific region, of which approximately 90 per cent corresponded to weather-related disaster events. Over 52 per cent of the global new disaster-induced displacements for this period were recorded in Asia-Pacific.

While cities in Asia Pacific are driving community-based disaster risk reduction, further efforts are required to address the needs of highly at-risk populations especially in the 170 cities located in areas of extreme risk and 314 cities in high-risk areas.<sup>24</sup>

- **Scaling up efforts to foster resilience and reduce emissions (target 13.2).**

Accelerated action is required to address climate and disaster risk at all scales, in particular at the local level. Preventing new disaster risk requires effectively integrating disaster risk reduction into development planning, budgeting and implementation. Enhanced capacities are required to assess climate and disaster risk, apply risk information to decision-making processes, identify risk prevention and reduction solutions and opportunities, and estimate the costs and benefits of mainstreaming DRR and climate change into sector policies. Several countries in the region have undertaken concrete steps in this direction, however, much more needs to be done to ensure development is protected from disasters. Climate/Disaster Risk Management Public expenditure and institutional review, have been conducted across Asia-Pacific to examine trends in the composition and efficiency of spending on adaptation/disaster risk management and consistency with policy objectives.

Asian economies accounted for two-thirds of the global increase in carbon emissions in 2017, and coal-fired electricity generation in Asia-Pacific accounted for the largest increase in coal demand globally over the same interval (with an increase of 35 Mtoe relative to 2016). This increase came chiefly from China, India, Indonesia, Japan and Republic of Korea.<sup>25</sup> In addition to power generation, industry (especially steel and cement), passenger transport and buildings make significant contributions to emissions at the regional level. A forthcoming analysis of China, India and Japan highlights considerable gaps between current per capita lifestyle carbon footprints and related global targets.<sup>26</sup>

Scaling up integrated policies and practices is required to address short-lived climate pollutants and the negative effects of air pollution on health while addressing GHG emissions as drivers of global climate change. Many of the conventional approaches to air quality management for large energy producing and industrial sources involve the installation of end-of-the pipe abatement technologies that can mitigate important pollutants such as sulfur oxides (SO<sub>x</sub>) and nitrogen oxides (NO<sub>x</sub>), but can lead to increases in energy use and GHGs and increase near-term global warming effects.

Significant potential to reduce emissions in the region requires addressing depletion of terrestrial and marine ecosystems.<sup>27</sup> Drained peatlands in South-East Asia are responsible for up to 5 per cent of human-derived CO<sub>2</sub> emissions<sup>28</sup> and in three decades Indonesia has lost 40 per cent of its mangroves, making up only 6 per cent of

21 ESCAP, *Asia-Pacific Disaster Report 2017* (2017).

22 See <https://www.emdat.be/>

23 UNISDR and CRED, *Economic Losses, Poverty & Disasters: 1998-2017* (Geneva, UNISDR, 2018; Louvain, CRED, 2018).

24 ESCAP, *Leave No One Behind: Disaster Resilience for Sustainable Development, Asia-Pacific Disaster Report 2017* (Bangkok, United Nations, 2018).

25 IEA, *Global Energy & CO<sub>2</sub> Status Report 2017* (Paris, IEA, 2018).

26 Estimates of current annual footprints in tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) in Japan: 7.6, China: 4.2, and India: 2.0 are set against proposed lifestyle carbon footprints targets of 2.5 tCO<sub>2</sub>e in 2030, 1.4 by 2040, and 0.7 by 2050 to meet the 1.5°C target, the global peak of GHG emissions, early. IGES, *1.5 Degree Lifestyles Report* (Hayama, IGES, forthcoming).

27 UN ESCAP, *Environment and Development Series 2018, Harnessing Environmental Action for Sustainable Development in Asia and the Pacific* (Bangkok, United Nations, 2019).

28 Green, Sophie M. and Susan Page, "Tropical peatlands: current plight and the need for responsible management", *Geology Today*, vol. 33, No. 5 (2017), pp. 174-179.



its total forest loss, but equal to 10-31 per cent of estimated annual emissions from land-use sectors.<sup>29</sup> Studies indicate that the restoration of mangrove forests in the Asia-Pacific region has the highest potential to enhance ecosystem carbon storage in the tropics.<sup>30</sup> Alongside promoting lower carbon footprint lifestyles, and reducing emissions from agriculture, the built environment and infrastructure, protecting natural ecosystems and investing in cost-effective, nature-based solutions is required to curb emissions and increase resilience in the region.<sup>31</sup>

- **Improving risk assessments and climate change education (target 13.3).**

While many successful initiatives have been undertaken to raise awareness on DRR and adaptation, additional investments are required, seven countries have reported through the Sendai Framework Monitor on the availability of early warning systems and risk information at different levels of sophistication, completeness and coverage. While some countries have conducted comprehensive disaster risk assessments for relevant hazards, many countries have merely completed selected hazard assessment and mapping. Vulnerability assessment models and data are underdeveloped and the availability, accessibility and usability of disaster risk information for policymaking remains constrained. The two tsunami events experienced in Indonesia in 2018 demonstrate that additional investments are required to ensure early warning systems reach exposed populations to enable protective action. Institutional capacities of local institutions need to be enhanced to promote understanding of risk, and to design impact-based early warning messages that trigger proper individual, community and institutional responses.

In Asia and the Pacific, 1,034 cities have joined the United Nations Office for Disaster Risk Reduction (UNISDR) and UN-Habitat *Making Cities Resilient* campaign since 2011.<sup>32</sup> While participation demonstrates willingness by mayors and local governments to address climate change and reduce disaster risks, most cities still need to invest in strengthening their understanding of risk, through local risk assessments and their planning for disaster risk reduction and climate action.

Preliminary data on climate change education suggests fragmented and slow progress on integrating mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula. A study of 22 countries in Asia showed that the concept of climate change is prevalent in four countries (Afghanistan, Kyrgyzstan, Thailand and Republic of Korea), while eight countries do not mention climate change in any of their education policies and curricula documents.<sup>33</sup>

- **Climate financing flows (target 13.a).**

The incremental annual investment to enhance climate resilience, mitigation and adaptation is estimated to be about US\$395-565 billion through 2030 for Asia and the Pacific, including: US\$176-443 billion to invest in renewable energy (US\$100-320 billion) and improve energy efficiency (US\$76-123 billion) and investments in transport (US\$174 billion), information and communication technology (US\$24 billion) and water and sanitation (US\$21-47 billion) sectors to make infrastructure to be climate resilient. At the subregional level, small island developing States (SIDS), countries in the Pacific subregion and least developed countries (LDCs) are projected to face the largest financing challenges. The annual climate-adjusted investment needs for these country groups are expected to be around 1.7-1.9 per cent of gross domestic product (GDP).

### III. PROMISING INNOVATIONS AND BEST PRACTICES

- **Monitoring progress on disaster risk reduction.**

The adoption of the Sendai Framework indicators for monitoring progress on SDGs 1, 11 and 13 is an example of successful international efforts to achieve greater policy coherence across global frameworks. Integrated

29 Daniel Murdiyarso and others, "The potential of Indonesian mangrove forests for global climate change mitigation", *Nature Climate Change*, vol.5, No. 12 (December 2015), pp. 1,089–1,092.

30 Luu Viet Dung and others, "Carbon storage in a restored mangrove forest in Can Gio Mangrove Forest Park, Mekong Delta, Vietnam", *Forest Ecology and Management*, vol. 380 (2016), pp. 31-40. The study concluded that mangrove forest and mudflat areas store the equivalent of 152.3 teragrams CO<sub>2</sub>e, which is greater than the total CO<sub>2</sub> emissions of Viet Nam for 2013.

31 Intergovernmental Panel on Climate Change (IPCC), *Special Report on the Impacts of Global Warming of 1.5°C above Pre-industrial Levels and Related Global Greenhouse Gas Emission Pathways* (Geneva, IPCC, 2018).

32 More information on Making Cities Resilient available from <https://www.unisdr.org/we/campaign/cities>

33 Based on a 2016-17 analysis of national education policy documents and 4th and 8th grade curricula documents of 22 countries in Asia. UNESCO and Mahatma Gandhi Institute of Education for Peace and Sustainable Development, *Rethinking Schooling for the 21st Century: The state of Education for Peace, Sustainable Development and Global Citizenship in Asia* (New Delhi, Mahatma Gandhi Institute of Education for Peace and Sustainable Development, 2017).





monitoring and reporting systems enhance coherence in practice by reducing the transaction costs involved in data collection and reporting while supporting coherent planning and implementation. Indonesia has been leading regional efforts in data management and visualization. Their disaster loss database (DIBI) and risk information systems (InaSafe) provide a disaster risk index which is used for planning. In October 2018, the country launched an SDG-platform<sup>34</sup> using an interactive map dashboard.

- **A Framework for Resilient Development in the Pacific.**

In the Pacific, awareness of the threat of climate change to the island development and a strong understanding of the linkages between climate and disaster risk informed the formulation of a single integrated regional Framework for Resilient Development in the Pacific.<sup>35</sup> Integrated approaches to climate change adaptation and disaster risk reduction not only make sense to address vulnerability and risk profiles of SIDS, but are also considered to be the most cost-effective approach for capacity-constrained governments. Tonga's experience with its first Joint National Action Plan for Disaster Risk Management and Climate Change Adaptation inspired the regional framework and similar plans in other Pacific islands.

- **Innovative climate financing tools.**

In 2015, Indonesia introduced a system of 'budget tagging' to identify expenditures that deliver specified climate change benefits, resulting in the issuance of a US\$1.25 billion green *sukuk*<sup>36</sup> in 2018 to reduce emissions. Bangladesh and Pakistan have launched innovative financial tools, including risk transfer and insurance, to enhance investments in adaptation and DRR, while several countries have made a strong push to shift the funding focus from response and relief to prevention and mitigation. In January 2019, Singapore enforced a Carbon Pricing Act, which requires industrial facilities to report their emissions annually and imposes a carbon tax on facilities that emit equal to or above 25,000 tCO<sub>2</sub>e annually.<sup>37</sup> The aim is to incentivize emission reductions and the use of clean technologies. Singapore will review the carbon tax rate by 2023, with plans to increase it by 2030.

- **Ecosystem solutions for resilience in Sri Lanka.**

Seacology, a non-profit environmental conservation organization, is helping Sri Lanka become the first nation in history to preserve and replant all of its mangrove forests. The Sri Lanka Mangrove Conservation Project, is increasing the resilience of coastal communities by promoting improved fishing and agriculture, fostering sustainable livelihoods that can withstand shocks and stresses, and ensuring a healthier environment in which communities can thrive, while protecting vital nature-based carbon stocks.

## IV. PRIORITIES FOR ACTION

### 1. **Integrate climate change and disaster risk reduction into the entire project cycle from policy planning to implementation.**

Urgent action is needed to understand risk, prevent new risks, reduce existing risk and adapt to a changing climate by strengthening coherent climate and disaster risk governance systems and develop evidence-based and inclusive policies that are linked to financial resources. This includes developing coherent disaster risk reduction and climate change strategies at all levels including all relevant stakeholders that create multiple benefits focusing on national priority sectors, such as scaling up sustainable food and energy consumption and production, investing in resilient and sustainable infrastructure and applying ecosystem-based approaches that increase resilience and carbon storage. To implement the recommendation, the roundtable recommended to develop sector specific knowledge products such as policy briefs based on the experiences of countries in the region that can be used by different stakeholders in advocating for coherent climate and disaster risk policy planning and implementation by the next APFSD 2020.

34 United Nations Global Pulse, "Indonesian Government Develops a Monitoring Dashboard for the SDGs", available from <https://www.unglobalpulse.org/news/indonesian-government-develops-monitoring-dashboard-sdgs>.

35 Pacific Community (SPC), Secretariat of the Pacific Regional Environment Programme (SPREP), Pacific Islands Forum Secretariat (PIFS), UNDP, UNISDR and University of the South Pacific (USP), *Framework for Resilient Development in the Pacific: An Integrated Approach to Address Climate Change and Disaster Risk Management (FRDP) 2017–2030* (Suva, SPC, 2016).

36 Islamic bond

37 Singapore National Environment Agency, "Carbon Tax" (2019). Available from <https://www.nea.gov.sg/our-services/climate-change-energy-efficiency/climate-change/carbon-tax>



## 2. **Leverage climate action with co-benefits.**

Leverage climate actions from mitigation, adaptation and resilience-focused efforts in line with the Paris Agreement with co-benefits for realization of multiple SDGs, across all levels (local, sub-national, national, sub-regional, regional) over the short, medium and long-terms. Climate actions can leverage co-benefits in areas of, inter alia, air pollution (including transport, energy) – SDG 7, SDG 13; human settlements and infrastructure (sustainable smart cities) – SDG 9, SDG 11; ecosystem restoration, sustainable land management and biodiversity – SDG 14, SDG 15; inclusiveness and gender equality – SDG 5, SDG 10; public health – SDG 3; water scarcity and quality – SDG 6; as well as education and vocational training – SDG 4.

## 3. **Strengthen monitoring systems and data collection.**

Investment in climate and disaster risk assessments and disaster loss accounting systems, with emphasis on vulnerability analysis and disaggregated data collection will enable implementation and monitoring of adaptation and disaster risk management policies and inform public investment frameworks. National environmental and disaster statistics and disaster forensic capabilities need to be improved to identify socio-economic impacts of past extensive and intensive disasters, assess costs and benefits of disaster risk reduction investments and improve the accuracy of future disaster risk modelling. Emphasize the importance of data for national planning and localizing the SDGs. Ministries responsible for managing monitoring systems and data collection should leverage existing platforms and mechanism to strengthen coordination and data sharing across sectors, civil society, and other stakeholders.

## 4. **Strengthen regional cooperation on mobilizing financing for anticipatory disaster risk reduction and adaptation strategies.**

Regional cooperation, encompassing countries, civil society and other stakeholders, should strengthen the focus on mobilizing and financing ex-ante measures to prevent hazards from becoming disasters. Such collaboration could focus on enhancing capacities of countries to improve the quality of disaster risk assessment to inform public expenditure and institutional reviews, conducting technical reviews to better understand the financial arrangements which are suitable to the risk profiles and capacities of countries, scaling up of innovative anticipatory financial mechanisms, and regional and global networking of civil society organizations. Access of civil society organizations to financial mechanisms should be enhanced to enable them to contribute to addressing the vulnerabilities of local communities to disasters.

## 5. **Develop innovative and blended climate finance tools.**

Complement conventional and international climate finance with blended approaches to climate action and disaster risk reduction by mobilizing private sector financing and shifting national budgets. While examples of blended financial tools exist in the region, the conceptual understanding and implementation knowledge is limited, especially among SIDS and LDCs who need readiness support to develop such tools and access relevant funding mechanisms. Innovative schemes can include launching carbon pricing instruments, such as emissions trading systems or a carbon tax to incentivize industries to reduce emissions. Tools such as green and catastrophic bonds and integration of climate change and disaster risk reduction into business operations should be promoted. While doing so, screening markers and safeguards should be developed to ensure the returns to investment are not limited to economic but also cover social and environmental returns, which also enhances accountability. Necessary incentives should be provided to enhance the development and application of such tools. Finally, financing tools should ensure that investments in adaptation are increased.

## 6. **Improve access to and flow of climate finance.**

The institutional capacity of governments, civil society, public and private stakeholders needs to be strengthened to develop 'bankable' proposals that allow investors to make climate-related investments (for instance, through creating climate finance training in universities). Developing countries, especially small island developing States, least developed countries and climate vulnerable areas, will require 'readiness' support to accredit direct access entities and help them develop successful GCF proposals. Finance reporting needs to be improved and climate finance flows need to become more transparent to address the gap between pledged and received resources. This can be achieved by engaging civil society in the review of proposals.

## ANNEX

The official indicator framework for SDG 13 proposes eight indicators. Of these, only one indicator is classified as Tier I, two are classified as Tier II and the remaining five are classified as Tier III, as of October 2018. Currently, the main sources of data for Tier I and II indicators for assessing progress towards this goal are modified from the Sendai Framework Monitoring system. Where data exist, they frequently miss the degree of disaggregation expected and lack consensus in definitions, moreover, computation challenges arise in the self-scoring process and appraisal of risk and resilience of countries reporting through the Sendai Framework. For the majority of indicators, the methodology is still under development.

Official	13.1.1	Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population
Official	13.1.2	Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030
Proxy	13.2.P1	Carbon dioxide (CO <sub>2</sub> ) emissions from fuel combustion, Kg per 1 US\$ (2010) GDP
Proxy	13.2.P1	Carbon dioxide (CO <sub>2</sub> ) emissions from fuel combustion, Metric tons of CO <sub>2</sub> equivalent per capita
Proxy	13.2.P2	Greenhouse gas (GHG) emissions, total, Metric tons of CO <sub>2</sub> equivalent per capita

*Table 1. Official and proxy indicators for SDG 13 for which there is at least one data point for more than half of ESCAP countries*

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