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Accelerating the implementation of the 2030 Agenda for Sustainable Development in Asia and the Pacific through environmental solutions

Realizing environmental benefits through policy convergence and enhanced regional cooperation

Note by the secretariat

Summary

The present document is focused on policy options to address the most critical environmental challenges, including climate change, air pollution, ecosystem health and urbanization. These interconnected challenges can be addressed by employing state-of-the-art practical solutions that are supported by robust assessments conducted using innovative data and scientific analysis. Policy options and opportunities for regional cooperation among member States to accelerate progress in four environmental domains are detailed, and the ways in which the secretariat can support member States in that regard are identified.

The Committee on Environment and Development may wish to consider suggested regional activities to enhance the ambition of climate actions, support clean air solutions, enhance the health of ecosystems and advance the outcomes of the Seventh Asia-Pacific Urban Forum with a view to promoting sustainable urban development and providing the secretariat with further guidance. The Committee may also wish to consider suggested policies that member States could adopt to institute and strengthen regional environmental governance.

* ESCAP/CED/2020/L.1.

I. Building back better and accelerating enhanced environmental actions

1. The Economic and Social Commission for Asia and the Pacific (ESCAP) has specific mandates to work on key environmental issues. The mandates are set forth in various documents including the Ministerial Declaration on Environment and Development for Asia and the Pacific, 2017 (ESCAP/74/10/Add.1), in which the seventh Ministerial Conference on Environment and Development in Asia and the Pacific resolved, inter alia, to address the harmful effects of climate change (which are related to the adverse effects of air pollutants); ensure the conservation and sustainable management of natural resources, biodiversity and ecosystems; and promote sustainable urban planning and spatial development.

2. The present document includes policy options that member States can adopt to accelerate progress in the following four environmental domains: (a) raising climate ambition; (b) safeguarding ecosystem health; (c) clean air for all; and (d) cities for a sustainable future. The document concludes with a discussion of how the secretariat can support member States to improve environmental outcomes in support of the 2030 Agenda for Sustainable Development.

3. As discussed in document ESCAP/CED/2020/1, ecosystem health degradation and climate change are contributors to viral outbreaks. Better protecting nature, restoring degraded ecosystems and accelerating climate action can mitigate the risk of future pandemics. Actions taken to improve air quality will have environmental impacts and direct impacts on human health. Owing to the size of their populations and their high level of global and local interconnectivity, cities are particularly vulnerable to the spread of viruses.

4. Policy action must be taken before irreversible changes in vital Earth systems occur. Taking action will require decisions to be made in the absence of certainty about the critical thresholds or rates of deterioration of these systems. Changes in these systems are felt at the local, national, regional and global levels. National Governments can play a leading role in this regard, by integrating cross-sectoral policies and budgets at the ministerial level to address key trends and drivers and communicate on the matter with the public. The vertical integration of actions at the municipal level has a complementary and catalytic effect, stimulating innovative policies and providing spaces for implementation and useful lessons for cities across the region. A whole-of-government approach can be effective if it is strengthened by engagement with all stakeholders to develop solutions together.

5. Through enhanced regional cooperation in the form of transformative, integrated environmental actions, Asia and the Pacific can contribute to planetary health. Regional cooperation together with good governance and appropriate policies can help to integrate sustained improvements in human health and well-being with the preservation and rehabilitation of natural systems.

II. Entry points for accelerating environmental actions

A. Raising climate ambition

1. Status of nationally determined contributions in Asia and the Pacific

6. Asia and the Pacific faces fundamental threats posed by climate change. The region is also a major contributor to climate change, producing more than

half of global emissions.[1] The direct and indirect costs of climate change for the region include irreversible damage to marine systems, species extinction, natural disasters, public health crises and lowered economic productivity. A fundamental shift is needed to decarbonize economies, make supply chains more green and build low-carbon climate-resilient cities in Asia and the Pacific.

7. Nationally determined contributions are the mechanism by which member States communicate national climate targets with regard to mitigation, adaptation and other areas (e.g. increasing the share of renewable energies in the local energy mix), accompanied by information on suggested measures and local processes for defining, implementing and evaluating actions to that end. The initial round of nationally determined contributions submissions was in 2016, and the first updates are due in 2020. Member States are expected to communicate updated nationally determined contributions every five years. Each update should be progressively more ambitious, involving multiple stakeholder groups in defining new actions (e.g. through local consultation processes), inspiring innovation with regard to local climate action and increasing a sense of ownership among citizens. Nationally determined contributions can also be designed to further enable climate action at the city level, as cities are likely to contribute more than half the rise in greenhouse gas emissions over the next 20 years.

8. Fifty-one member States submitted intended nationally determined contributions which subsequently evolved into nationally determined contributions. Of 103 Member States that announced their intention to submit ambitious nationally determined contributions, only 20 were from the Asia-Pacific region.[2] Twelve countries submitted nationally determined contributions by September 2020 for the second round of submissions. Of those 12 countries, which are responsible for 3 per cent of the global greenhouse gas emissions,[3] only 4 were from Asia and the Pacific[4] (see figure I).

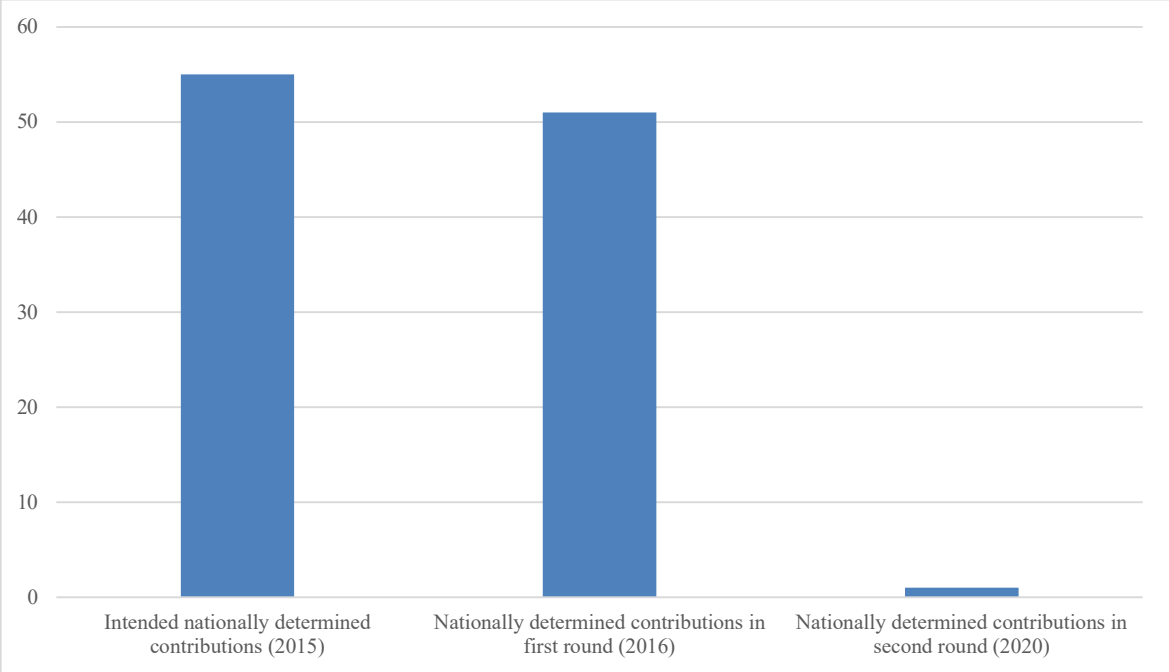
[1] *Economic and Social Survey of Asia and the Pacific 2017: Governance and Fiscal Management* (United Nations publication, Sales No. E.17.II.F.8).

[2] Afghanistan, Armenia, Bangladesh, Bhutan, Cambodia, Fiji, Georgia, Kiribati, the Lao People's Democratic Republic, Maldives, the Federated States of Micronesia, Mongolia, Nauru, Nepal, Pakistan, Palau, Papua New Guinea, Solomon Islands, Sri Lanka and Tuvalu.

[3] United Nations Framework Convention on Climate Change, "Interim NDC Registry". Available at www4.unfccc.int/sites/ndcstaging/Pages/Home.aspx (accessed on 30 September 2020).

[4] Japan, the Marshall Islands, New Zealand and Singapore.

Figure I
Number of member States that submitted intended nationally determined contributions in 2015 and nationally determined contributions in 2016 and 2020



2. Raising the ambition of nationally determined contributions: trends and barriers

9. Asia-Pacific member States urgently need to speed up climate action. The impact of the containment and lockdown policies implemented in response to the coronavirus disease (COVID-19) pandemic reduced greenhouse gas emissions by 17 per cent in the month of April 2020. It is estimated that even when industrial activities resume, overall global emissions in 2020 will still have been reduced by between 4 and 7 per cent. However, climate change has not stopped for COVID-19.[5] In 2019, global carbon dioxide emissions reached the record level of 36.7 gigatons, which represents a 62 per cent increase since the start of climate change negotiations in 1990.

10. Rapid economic expansion is expected to continue in the region, at an average annual rate of 2.6 per cent.[6] According to projections, the low-income countries will have the highest growth rate, followed by middle-income countries. Together, the low- and middle-income countries will account for the majority of regional gross domestic product (GDP) by 2060, while the highest-income countries will experience the least economic growth in both absolute and relative terms.

[5] World Meteorological Organization and others, “United in science: a multi-organization high-level compilation of the latest climate science information” (Geneva, 2020).

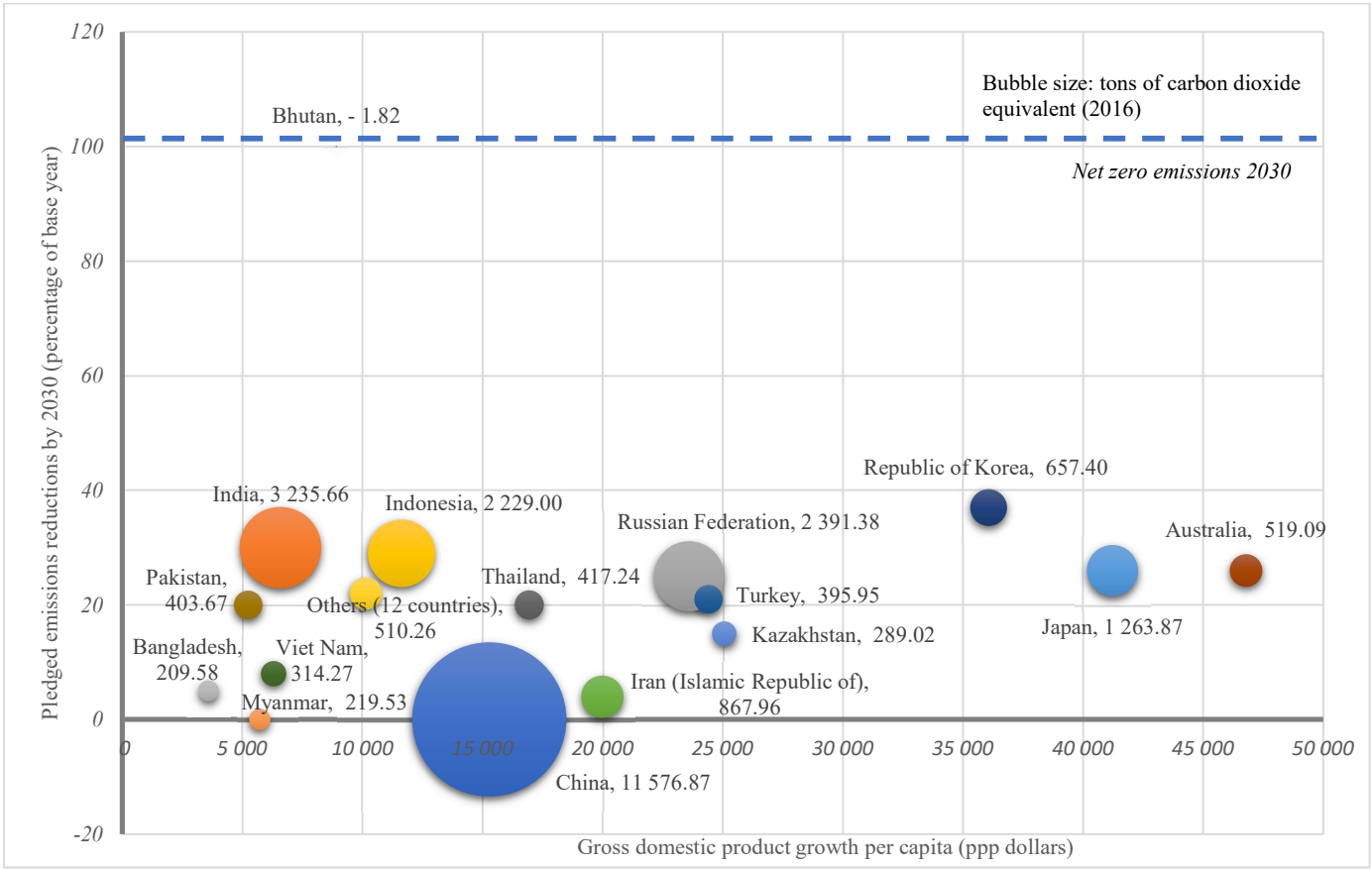
[6] Yingying Lu, Jim West and Heinz Schandl, “Technical input for the ESCAP Environment Division flagship report”, paper prepared for ESCAP by the Commonwealth Scientific and Industrial Research Organisation, February 2020.

11. Regional economic growth projections are strongly correlated with rising greenhouse gas emissions. Carbon dioxide equivalent emissions are expected to rise from approximately 35 gigatons in 2020 to 50 gigatons in 2060. According to the United Nations Environment Programme (UNEP) publication entitled *Emissions Gap Report 2019*, a 7 per cent annual reduction in emissions is needed between 2020 and 2030 if global warming is to be limited to 1.5°C. This would amount to a total reduction of between 29 and 32 gigatons of carbon dioxide equivalent, which would be analogous to eliminating the annual emissions of the six biggest emitters.

12. Under that scenario, China would remain the largest greenhouse gas emitter in the Asia-Pacific region. Its emissions would peak around 2040, then recede to approximately one third of regional emissions by 2060. During the same period, greenhouse gas emissions throughout South-West Asia and in India would increase substantially. The nationally determined contributions submitted by member States fall short of the level of ambition required to keep the global temperature rise below 1.5°C and of the 2030 net zero emissions target required to reach that goal (see figure II).

Figure II

Asia-Pacific comparison of historical greenhouse gas emissions to gross domestic product growth per capita and nationally determined contribution pledges for greenhouse gas emissions reductions



Abbreviation: ppp, purchasing power parity.

13. According to a 2015 synthesis report of the United Nations Framework Convention on Climate Change secretariat, aggregate emissions reductions pledged in the intended nationally determined contributions were not consistent with the range of least-cost scenarios or the global cumulative emissions of 1,000 gigatons of carbon dioxide equivalent within which the global temperature rise could be kept below 2°C.[7] The insufficient ambition of current mitigation efforts is also emphasized in the UNEP *Emissions Gap Report*. According to the Climate Action Tracker, at least 17 member States have policy plans that are incompatible with the Paris Agreement and the trajectories that would keep global temperature rise below 1.5°C.

3. Policy solutions

14. A safe climate can only be achieved if Governments take ambitious climate action to implement the Paris Agreement and achieve the Sustainable Development Goals. Governments must follow a transformational pathway that includes a transition to clean energy and transportation and improved energy efficiency.

15. If Asia-Pacific emissions are to attain the net zero target by 2030, they will need to hit their peak by 2020 and then plunge 45 per cent over the ensuing decade. Decarbonizing power generation in the region includes ensuring that the share of renewables in the total energy mix is increased by at least a factor of six and amounts to 60 per cent and above by 2050. Progress in this regard is being made in India, where an initiative is under way to cross the 100 GW renewable energy capacity threshold in 2020, and plans are in place to make rapid strides towards the ambitious 175 GW clean energy target by 2022.

16. The reduction of greenhouse gas emissions requires a combination of mitigation measures and policy packages to ensure a cumulative impact. Four member States have developed long-term strategies, namely Fiji, Japan, the Marshall Islands and Singapore. The Government of Singapore pledged to halve emissions from their 2020 peak to achieve net zero emissions as soon as possible and by 2050 at the latest; the Government of the Marshall Islands pledged to achieve net zero emissions by 2050; the Government of Fiji is aiming to reach net zero emissions for all sectors by 2050; and the aim of the Government of Japan is to achieve an 80 per cent emissions reduction by 2050.[8]

17. The national expert Sustainable Development Goal tool for energy planning, developed by the Government of Indonesia with support from ESCAP, is a very powerful tool for achieving affordable and clean energy. The tool will allow member States to design best-case scenarios for energy production, supply and use in industry, transport and housing, with a view to achieving net zero emissions, developing renewable energy business options, ensuring access to affordable and clean energy for all and creating new job opportunities. Additionally, a study showed that if Indonesia follows the 1.5°C compatible scenario it will lead to the creation of 260,500 new jobs compared to the business-as-usual development scenario.[9]

18. Enhancing institutional frameworks and the integration of the nationally determined contributions into sectoral, subnational and city-level budgets will

[7] FCCC/CP/2015/7.

[8] Climate Watch, “Climate commitments under the Paris Agreement”. Available at www.climatewatchdata.org/ndc-overview (accessed on 8 September 2020).

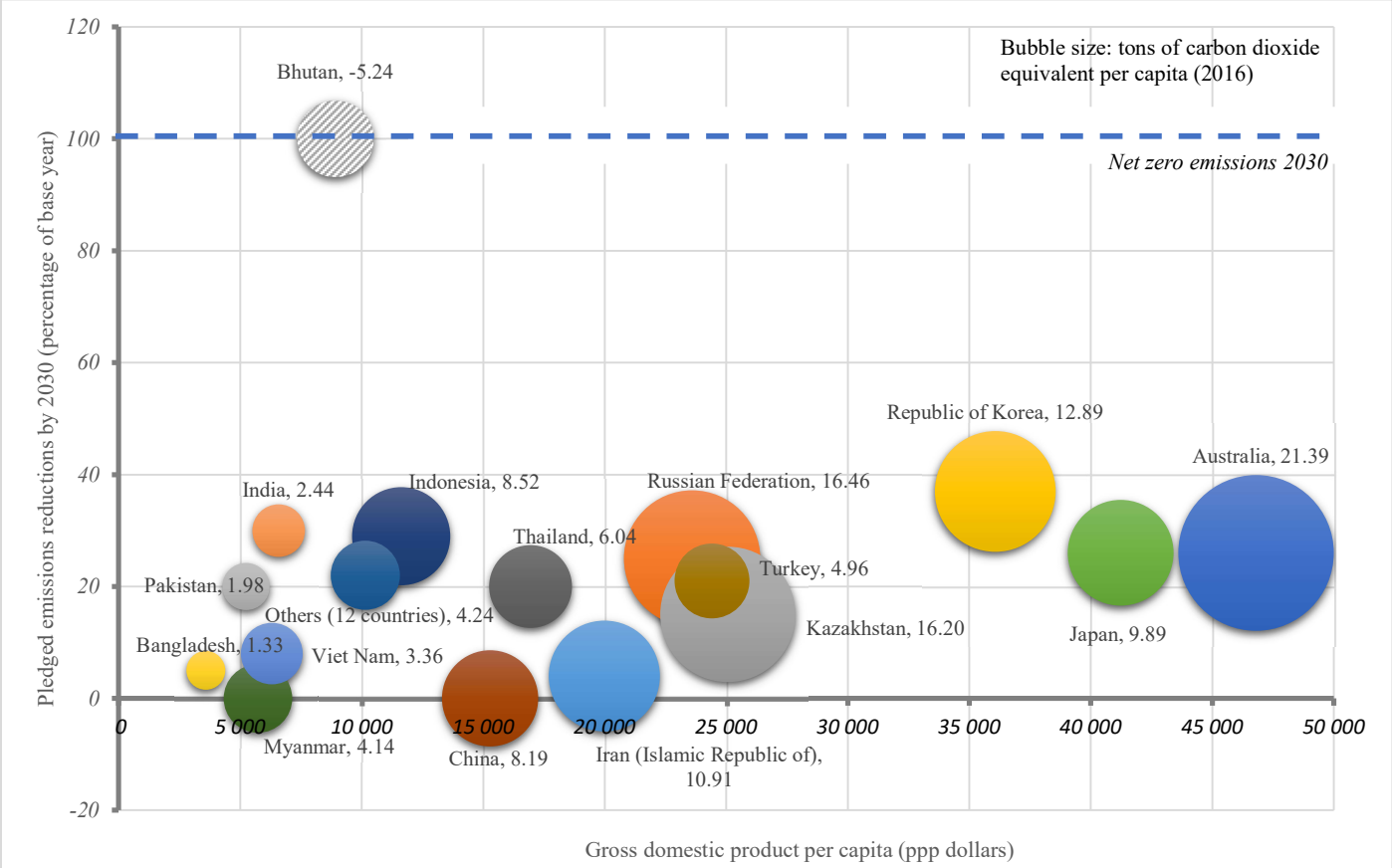
[9] Climate Action Tracker, “Scaling up climate action: key opportunities for transitioning to a zero emissions society”, Scaling Up Climate Action Series: Indonesia (October 2019).

further raise ambition in the next round of submissions. Developing synergies between the mitigation efforts set forth in nationally determined contributions and the national adaptation plans is an important step in that regard. Furthermore, the engagement of the public sector in the development of climate finance strategies would mobilize domestic financial resources needed to implement and scale up nationally determined contributions, as is being achieved in the Philippines with the strategy for a just transition to a zero emissions society and promoting green jobs.[10]

19. The per capita emissions of the countries in the Asia-Pacific region (see figure III), which correlate to national consumption patterns, make a compelling case for the application of market mechanisms and carbon pricing instruments. Carbon pricing instruments have proved successful in regulating the overconsumption that drives up greenhouse gas emissions, particularly in developed countries.

Figure III

Asia-Pacific comparison of historical greenhouse gas emissions per capita to gross domestic product growth per capita and nationally determined contribution pledges for greenhouse gas emissions reductions



Abbreviation: ppp, purchasing power parity.

[10] Ibid., "Climate governance: assessment of the government's ability and readiness to transform the Philippines into a zero emissions society", Climate Governance Series: The Philippines (October 2019).

20. National carbon pricing and trading mechanisms, such as the emissions trading scheme launched in Kazakhstan in 2013, create a favourable environment for engaging the private sector in implementing climate action commitments and financing the implementation of nationally determined contributions.

21. At the subregional level, the Working Group on Climate Change of the Association of Southeast Asian Nations (ASEAN) is considering the development of a carbon trading market in support of the ASEAN Nationally Determined Contribution Partnership Initiative launched at the twenty-fourth session of the Conference of the Parties to the United Nations Framework Convention on Climate Change, held in Katowice, Poland, in 2018.

22. Phasing out fossil fuel subsidies would also create the fiscal space needed for financing greener COVID-19 recovery packages. The Government of India has imposed higher duties on petrol and diesel to generate revenue for its COVID-19 stimulus package.

23. Regional cooperation provides opportunities to strengthen green COVID-19 recovery efforts by sharing good practices and advisory services. Furthermore, establishing regional networks for voluntary reviews of nationally determined contributions would provide communities of practice and peer learning to support implementation and ambitious national reviews.

B. Safeguarding ecosystem health

1. Overview of regional progress

24. The current COVID-19 pandemic has underscored the need to safeguard ecosystem health in order to ensure human health. Ecosystem health can be achieved through efforts such as protecting biodiversity, restoring degraded ecosystems, ensuring sustainable consumption and production patterns and preventing pollution.

25. Halfway through the United Nations Decade on Biodiversity (2011– 2020), which is now coming to an end, a midterm review of progress towards the Aichi Biodiversity Targets was conducted. The review showed that on most targets, there was either no significant overall progress or countries were regressing, especially on Target 5 on at least halving and, where feasible, bringing close to zero the rate of natural habitat loss, including forests, and significantly reducing degradation and fragmentation. Indeed, biodiversity continues to decline as a result of human activities; forest degradation and deforestation persist; the market for wildlife is growing; and invasive species are putting added pressure on ocean islands. All of these issues are being exacerbated by the adverse impacts of climate change.

26. The Asia-Pacific region is not on track to secure the global environmental commons encompassing the planet's shared environmental resources, including freshwater, marine, coastal, land and forest ecosystems and the biodiversity they host. Ecosystems in Asia and the Pacific are vulnerable to climate change and threatened by degradation. For example, more than 40 per cent of the region's coral reefs and 60 per cent of its coastal mangroves have already been lost, and approximately 80 per cent of its remaining coral reefs are currently at risk. In 2020, Asia and the Pacific recorded the world's highest number of threatened species (12,523). Between 2000 and 2015, the regional net loss in forest area (calculated as forest area minus planted forest) is estimated at 135,333 km^2, accounting for 10.6 per cent of the world's total natural forest loss. In addition, severe erosion has been observed on one quarter to one third of the

coastlines in South-East Asia. Lastly, freshwater ecosystems in the region are threatened by pollution and over-extraction for the provision of drinking water, energy production and irrigation.

27. Pollution affects soil, fresh water and the ocean. Human activities on land, including agriculture and water disposal carried out mostly through river systems, result in eutrophication, or excessive and harmful discharges of nutrients into the marine environment, causing a series of problems ranging from harmful algal blooms to hypoxia (low oxygen concentration).[11] Globally, harmful algal blooms grew exponentially, from less than 50 reported between 1980 and 1986 to approximately 350 in 2017.[12] Hypoxia has been detected in many areas in the region, especially in South-East Asia. Harmful algal blooms have been reported in higher numbers in the Yellow and East China Seas and in coastal waters off of Japan.[13] Nutrient fluxes of nitrogen and phosphorus are projected to increase in all subregions of Asia and the Pacific and to be followed by large loading, especially in South Asia.[14]

28. The issue of eutrophication is related to another form of pollution, namely marine debris, which also passes through river basins. Rivers dump 470,000 to 2.75 million tons of plastic into the world's seas annually. Ten river systems are responsible for up to 95 per cent of that debris. Eight of those river systems are in Asia, namely the Yellow, Hai, Pearl, Amur, Mekong, Yangtze, Indus and Ganges. Without transformative action, the amount of plastic debris in the ocean could triple in the next three decades.[15]

29. Both eutrophication and marine debris have direct impacts on marine life, including through entanglement and ingestion. Meanwhile, the bioaccumulation of chemical compounds found in or transported by ingested plastic particles is a cause of concern for human health. Plastic particles and marine litter may also act as carriers and breeding grounds for pathogens, diseases and contaminants.[16] In addition, pollutants such as pesticides, insecticides and chemical fertilizers used in intensive and unsustainable agricultural practices affect soil health and the health of freshwater ecosystems through run-off and can ultimately end up in food products consumed by humans and thereby affect their health.

30. Changes in the cryosphere and marine ecosystems may be catastrophic for human communities with close connections to coastal environments, which are and will continue to be drastically impacted by rising sea levels and extreme weather events. The changes could be particularly catastrophic in mainland Asia, where millions of people live near coastal areas, and in the Pacific, where the survival of many small island developing States is in jeopardy.

[11] Nerilie Abram and others, "Summary for policymakers", in Hans-Otto Pörtner and others, eds., *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate* (Intergovernmental Panel on Climate Change, 2019).

[12] Harmful Algae Information System, Harmful Algae Event Database. Available at http://haedat.iode.org/browseEvents.php (accessed on 21 September 2020).

[13] Chung-Chi Chen, Gwo-Ching Gong and Fuh-Kwo Shiah, "Hypoxia in the East China Sea: one of the largest coastal low-oxygen areas in the world", *Marine Environmental Research*, vol. 64, Issue 4 (October 2007).

[14] UNEP and others, "Eutrophication assessment and nutrient criteria development: atlas of global assessments and scenario forecasting on nutrient cycling and environmental impacts" (Global Nutrient Cycle Project, 2018).

[15] *Changing Sails: Accelerating Regional Actions for Sustainable Oceans in Asia and the Pacific* (United Nations publication, Sales No. E.20.II.F.15).

[16] Ibid.

2. Trends and barriers

31. The lack of progress on ecosystem health is compounded by climate change. Climate change and associated extreme events are impacting animal species distribution, population size and the timing of reproduction and migration. The resulting increased frequency of pest and disease outbreaks may have additional adverse effects on agricultural production and human well-being.[17] The ocean has warmed steadily since 1970, absorbing more than 90 per cent of the excess heat in the climate system, and warming has accelerated in the past two decades. The ocean has very likely absorbed between 20 and 30 per cent of total anthropogenic carbon dioxide emissions since the 1980s.[18]

32. Policymaking tends to be focused on single issues or single purposes and frequently fails to address underlying problems in a comprehensive or integrated manner. Often, sectoral policies do not reflect the consideration that all ecosystems and drivers of their degradation are linked. Direct drivers of degradation, such as unsustainable use of resources, illegal trade in wildlife, conversion of habitats, invasive alien species, pollution and climate change, and indirect drivers, such as socioeconomic and demographic changes, combine to create strain and pose risks with regard to ecosystems.[19] Climate change will exacerbate impacts on degradation, especially among indigenous and vulnerable communities.[20] To address marine litter issues, the trend in the region has been to regulate single-use plastic products such as plastic bags. Meanwhile, policies on fundamental issues such as extended producer responsibility and abandoned, lost or otherwise discarded fishing gear remain lax or non-existent.

33. Integrated policymaking approaches require decision makers and actors at all levels to be engaged in managing biodiversity, ecosystems and the larger global commons. Ecosystems extend beyond human-made municipal, regional and national borders. They are shared resources and, as such, need to be managed in a shared manner. The sustainable management of biodiversity corridors and ecosystems is impacted by a lack of transboundary cooperation, including at regional and global levels, and by jurisdictional barriers.

34. Rapid economic growth has resulted in the expansion of the consuming class in Asia and the Pacific, which in turn has stimulated strong consumption growth. Market failures that cause the societal costs of environmental degradation to be underestimated and investment in natural capital to be limited place considerable pressure on natural resources and ecosystems. Harmful subsidies driving environmental degradation are also in effect in the region, including subsidies for unsustainable sources of energy and fuel.

35. Lastly, there is a lack of adequate data, technology and information in the region. The capacity of environmental policymakers and managers to develop policies for improved environmental outcomes would be considerably strengthened by ensuring that they have access to more information in general, as well to the following: (a) adequate data to be able to assess and monitor the state of the environment; and (b) relevant technologies to develop more environmentally friendly consumer products, enhance industrial processes (in

[17] Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), *Summary for Policymakers of the IPBES Regional Assessment Report on Biodiversity and Ecosystem Services for Asia and the Pacific* (Bonn, Germany, 2018).

[18] Abram and others, “Summary for policymakers”.

[19] Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, *Summary for Policymakers*.

[20] Ibid.

particular for waste management) and achieve a more sustainable agrifood sector.

3. Solutions to accelerate progress while building resilience and addressing vulnerabilities

36. From a thematic perspective, it is essential that integrated environmental policies be developed, including policies that address the interconnected aspects of ecosystem health and the drivers of its degradation, including socioeconomic drivers, and that capitalize on co-benefits among sectors. Examples of integrated environmental solutions include the following:

(a) Adopting policymaking approaches that are focused on the nexus between biodiversity/ecosystems, health and climate change, for example mainstreaming the planetary health framework into national and sectoral polices;

(b) Addressing marine litter from an upstream-to-downstream approach, taking into account the transboundary and freshwater/marine dynamics that carry litter to the ocean;

(c) Adopting ecosystem-based adaptation measures that have positive impacts on both climate and biodiversity, including the following: (i) mangrove restoration for coastal defence; (ii) sustainable management of upland wetlands and floodplains to maintain water flow and quality; (iii) provision of space for nature in urban areas; (iv) conservation and restoration of forests to stabilize land slopes and regulate water flows; (v) prevention of flash floods and landslides as rainfall levels and intensity increase; and (vi) preservation of agricultural biodiversity to maintain soil moisture and nutrients while also adapting to climate change;

(d) Promoting a transition to agroecology, which would have positive impacts on food system resilience, agricultural biodiversity, water use, food safety, climate change mitigation and pollution.

37. The circular economy and sustainable consumption and production models are focused on minimizing resource use and keeping the resources that do enter the economy in productive use for as long as possible to maximize value.

38. At the local level, municipal governments should have the appropriate responsibility, authority and capacity to take action on the environment and climate and on disaster resilience. At the national level, integrated environmental policies require a whole-of-government approach, which entails the involvement of all relevant ministries.

39. Appropriate stakeholder engagement that brings all relevant environmental actors to the table allows for the equitable sharing of benefits and the preservation of the natural resources of indigenous communities and other minorities. Implementation and decision-making processes must embrace an inclusive and participatory approach that effectively addresses the needs of all constituencies and vulnerable groups and should include gender mainstreaming and the balancing of power structures.

40. It is necessary to implement economic models and innovative financing strategies that fully assess and value natural capital, incentivize sustainable consumption and production practices, discourage harmful investments and subsidies and ensure greener national financing frameworks. The mobilization of additional funds for the sustainable management of the global commons is also needed, including through creative financing strategies involving the private

sector (for example, green and catastrophic bonds, public-private partnerships and blended finance tools).

41. Sufficient and adequate data and technology are necessary for ensuring the proper assessment and monitoring of ecosystem health in the region, including with regard to status, trends, risks, threats and conservation needs. Additionally, technology can be used to enable and enhance green practices in fishing (preventing illegal, unreported and unregulated fishing), agriculture (agroecology) and manufacturing and industry (such as green construction materials, sustainable textiles and sustainable sourcing of materials).

42. In addition to strengthening the implementation of critical existing multilateral environmental agreements, there is a need to leverage and strengthen existing regional mechanisms on the environment to explore new multilateral agreements and initiatives that would guarantee the protection of terrestrial and marine ecosystems. Synergies between the existing agreements and initiatives at all levels and of varying scope should also be enhanced.

43. With regard to the protection of ecosystems, it is key to strengthen regional intergovernmental processes because they feed into multilateral environmental agreements and initiatives to reach global agreements (including the post-2020 global biodiversity framework) and support the implementation of existing global initiatives through the dissemination of key results of relevance such as the *IPBES Regional Assessment Report on Biodiversity and Ecosystem Services for Asia and the Pacific* published by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. There are also opportunities to support the system-wide coordination of key environmental initiatives of the United Nations such as UN-Water at the regional level, and the regional implementation of the upcoming United Nations Decade of Ocean Science for Sustainable Development (2021–2030). This will provide an opportunity to carry out regional and subregional processes and actions to secure global strategies that enhance ecosystem protection, including ocean health.

44. Outcomes for the environment can also be strengthened by providing and contributing to regional platforms that facilitate the sharing of best practices, such as the Centre for Sustainable Agricultural Mechanization, the United Nations Special Programme for the Economies of Central Asia, environmental initiatives supporting ASEAN, and the Asia-Pacific Day for the Ocean.

C. Clean air for all

1. Overview and outlook

45. The negative effects of air pollution in Asia remain disproportionately high compared to other parts of the world. The region is now home to the top 30 most polluted cities in terms of air quality, and more than 90 per cent of its population is exposed to levels of air pollution that pose risks to health. Air pollution is caused by the release of gases and particles into the atmosphere by a variety of activities, primarily human, involving the combustion of fuels and other materials. The main air pollutants are small particles and ground-level ozone. Coarse and fine particulate matter, or PM10 and PM2.5 (particles with a diameter of less than 10 and 2.5 micrometres, respectively), can penetrate deep into the lungs and enter the cardiovascular system with disastrous effects to health.

46. Exposure to outdoor and household pollutants results in approximately 7 million deaths globally each year, while the health impacts from poor air quality are estimated to cost the world $5.7 trillion, or approximately 4.8 per cent

of global GDP. In the Asia-Pacific region alone, 2.2 million deaths related to air pollution occurred in 2016. Of those, 29 per cent were due to heart disease, 27 to stroke, 22 to chronic obstructive pulmonary disease, 14 to lung cancer and 8 to pneumonia.[21] Not only does air pollution take an intolerable toll on human health, well-being and sustainable development, it predominantly affects the most disadvantaged communities who must work, travel and live in more polluted areas.

47. The ongoing COVID-19 pandemic has brought air pollution sharply into focus, both because of its effects on human health and the degree to which changes in human behaviour can rapidly mitigate its environmental effects. Air pollution is increasingly implicated as a factor heightening the susceptibility of individuals with respiratory diseases to COVID-19. The shutdowns implemented across the region in response to the virus reduced vehicular traffic and energy consumption, resulting in decreased emissions that led to a remarkable clearing of the skies. People in northern India could see the Himalayan mountain range more than 150 km away for the first time in decades. Satellite images of China illustrated drastic declines in nitrogen dioxide. In Metro Manila, Philippines, PM2.5 pollution decreased by 80 per cent over a period in March coinciding with the shutdown. Bangkok, Delhi, India, Kuala Lumpur and cities across the region all experienced cleaner air during the shutdowns.

48. Recent evidence indicates that the resumption of economic activities after shutdowns is accompanied by a rebound in air pollution. If immediate action is not taken to reduce the risks of further pollution, not only will the region's development gains over recent decades be at risk, but regression against the Sustainable Development Goals will be a serious possibility, specifically with regard to Goal 3 (Good health and well-being) and Goal 11 (Sustainable cities and communities). Similarly, insufficient progress on Goal 13 (Climate action) is directly related to pollutants and emissions being released into the skies. The 2030 Agenda cannot be fully implemented if patterns of development continue to pollute cities and endanger populations, whose only recourse has been to monitor air quality through applications and advisories and to wear masks.

2. Trends and barriers

49. Rapid and unplanned urbanization is a significant driver of air pollution in the region. Unregulated construction activities contribute to dust and high levels of particulate matter. In informal settlements on the periphery of expanding urban centres, the reliance on burning raw coal for heat causes increased air pollution during the cold season. In some Asia-Pacific cities, approximately 80 per cent of urban air pollution is attributed to the burning of raw coal, which causes fine particulate matter readings of approximately 1,000 micrograms per cubic metre. These examples emphasize the need for policy action to encourage sustainable energy and urban planning. Data collection is key and can be utilized in conjunction with innovative tools to aid policymakers in decision-making, thereby enabling the implementation of highly effective policy interventions to directly address key sources of air pollution.

50. The burning of straw (crop residue or stubble left on the field after harvesting) is a common concern in many countries in Asia and the Pacific. Owing to the lack of low-cost, effective and technically feasible uses of straw,

[21] World Health Organization (WHO) Regional Office for the Western Pacific, "One third of global air pollution deaths in Asia Pacific", 2 May 2018.

farmers frequently burn it in the field, causing serious environmental and health problems including transboundary air pollution. Apart from causing accelerated greenhouse gas emissions and fine particulate matter pollution, straw burning also depletes soil carbon and micronutrients while adversely affecting the temperature and pH balance of soil as well as its moisture and organic matter.

51. Industrial activities are one of the leading sources of air pollution in the region, including building, mining, smelting and the manufacture of cement, ceramic and bricks. Industrial emissions are particularly harmful in urban contexts in which the nexus between the concentration of harmful elements and vulnerable populations such as women and children creates a public health concern.

52. Least developed countries face especially difficult constraints. Apart from weaknesses in rural infrastructure and agricultural research and extension services, they have a limited capacity to manufacture machinery and equipment. To meet their needs, Governments of least developed countries rely predominantly on imports, which are often not well-adapted to local conditions.

3. Solutions to build back better and strengthen resilience

53. Building back better will require recovery plans to capture and then make permanent the glimpse of clean air many caught for the first time during shutdowns. Fostering a green recovery can prevent a permanent rebounding of air pollution to the high levels recorded before COVID-19. To that end, interventions in the following key areas can serve to capitalize on the situation created by the lockdowns: decarbonization, vehicle emissions reductions, and regulations and national legislation to establish clean air standards in line with WHO guidelines.

(a) **Decarbonization**. A transition to clean energy is essential, as continuing with fossil fuel energy will lock countries into a pattern of rising emissions and worsening air quality, which will exacerbate health risks and jeopardize the achievement of climate targets. Recovery and stimulus programmes should be designed to prioritize decarbonization and include safeguards to prohibit investments that would increase emissions.

(b) **Vehicle emissions reductions**. The reduction in vehicle emissions due to shutdowns was key to the temporary clearing of the skies during the pandemic. To make emissions reductions permanent, public transport must be expanded in a safe and efficient manner, and the shift to electric vehicles needs to be accelerated. The shift in business operations during the pandemic, for example the mainstreaming of remote work modalities, has resulted in energy and costs savings and may provide opportunities for low-investment, high-impact reductions in the long-term usage of energy and vehicles.

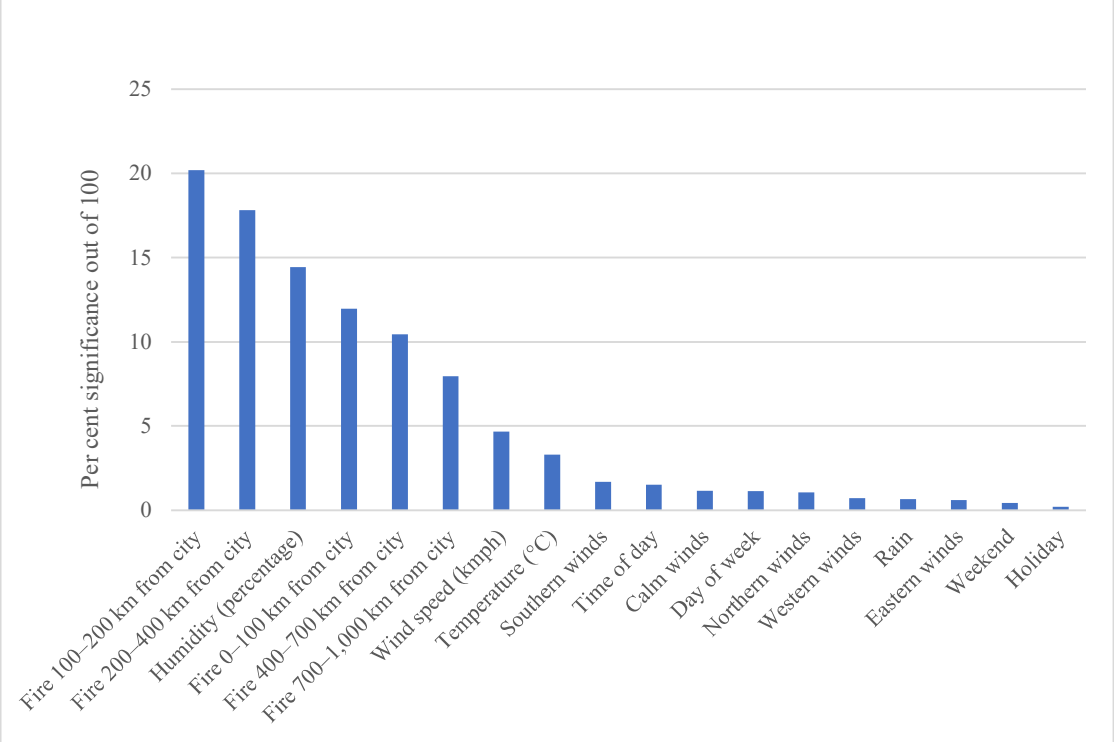
(c) **Clean air regulations and national legislation**. Regulations and national legislation to establish clean air standards in line with WHO guidelines should be adopted. Enforcement and compliance regimes are essential to ensure that pollutants from industrial and agricultural activities are reduced.

54. Policy action to enact clear standards can significantly improve air quality. Case studies have shown that tighter environmental standards targeting emissions from coal power plants have resulted in sulfur dioxide reductions. For example, in China, continuous emissions monitoring systems installed in power plants to monitor compliance with these standards recorded significant emissions reductions which were further validated by satellite data. Sulfur dioxide emissions concentrations at the power plants studied were reduced by an average of nearly 14 per cent after the standards were implemented.

55. Data collection is key to improving air quality and can be utilized in conjunction with innovative tools to enable the implementation of highly effective policy interventions to directly address key sources of air pollution.

56. For example, ESCAP is currently using satellite data on the prevalence of open burning (for example, wildfires and agricultural burning) and crowdsourced data on city traffic in order to measure their relationship to air quality in Asia-Pacific cities. The data serve as inputs to computer models currently under development that serve to identify the main sources of pollutants affecting air quality in a given city and, by extension, the priority areas for interventions and policies to mitigate pollution. The models were used to rank determining factors for air pollution sources affecting Chiang Mai, Thailand (see figure IV). In addition, the models can be used to simulate the impact of certain policy interventions on urban air quality, allowing policymakers to predict the degree to which certain activities need to be controlled to achieve satisfactory air quality in their cities.

Figure IV
Determining factors for air pollution in Chiang Mai, Thailand



57. The protection and restoration of ecosystems and the greening of the region's cities are fundamental to reducing air pollution. Protecting and expanding natural areas and promoting nature-based solutions will build resilience and improve air quality. Policies and investments planned in post-pandemic recovery packages can be directed towards supporting environmental efforts as a means to improve air quality.

58. Air pollution is by nature a transboundary and thus regional issue, requiring regional solutions. Whether from agricultural burning, transport emissions, industrial activity or power plants, pollutants can travel vast distances, impacting millions of people. The source of pollution affecting a given city, for example, may be well outside its jurisdictional or even national boundaries. All levels of government have a role to play in developing policies

to reduce pollutants, and national Governments must cooperate to address transboundary air pollution.

59. The Climate and Clean Air Coalition to Reduce Short-lived Climate Pollutants and UNEP, using the highest quality data available and state-of-the-art modelling, identified the 25 most effective measures to reduce air pollution in their 2019 report entitled *Air Pollution in Asia and the Pacific: Science-based Solutions*. In the report, they highlighted measures that have been proven to address air pollution from relevant sources, including industry, transport, agriculture, power generation, forest and peatland fires, waste, solvents, oil and gas, cooling agents and residential cooking, heating and lighting.

60. The secretariat is utilizing machine learning, remote sensing and crowdsourced data to provide city authorities with insight into the specific causes of air pollution affecting their communities. These data are paired with the projected impacts of mitigation options to empower city leaders with the information they need, enabling them to apply the right solutions to their local air pollution challenges.

D. Cities for a sustainable future

1. Overview and outlook

61. An estimated 90 per cent of global COVID-19 cases have been reported in urban areas.[22] The effects of COVID-19 exacerbate major challenges associated with pre-existing trends and barriers in Asia-Pacific cities. These systemic challenges include urban poverty and people living in informal settlements; constraints on city productivity due to lack of basic infrastructure; unsustainable urban resource use; significant generation of waste including marine pollution; rising disaster risks; and climate impacts. At the same time, Asia-Pacific cities have an extraordinary potential to transform the region's development trajectory by transitioning to a more sustainable development. The concentration of economic activity, potential for social transformation, high levels of annual investment in infrastructure, high degree of innovation, connections to surrounding rural and natural environments, and ability to reduce ecological footprints through densification all contribute to making cities change agents for systems-based solutions.

62. The Asia-Pacific region became majority urban in 2019 for the first time in human history. With more than 2.3 billion people living in region's cities, which account for more than 80 per cent of its GDP, the need for a sustainable urban future has never been greater.[23]

63. The growth of cities is a significant contributing factor to the emergence of new and more frequent zoonotic diseases. Zoonotic disease emergence occurs through a number of complex and interlinked pathways including the expansion of urban sprawl and encroachment of human development into nature; environmental pollution; deforestation and subsequent loss of biodiversity; destruction of natural habitats; intensive and polluting agricultural practices; and humans living and working in closer proximity to wildlife, all of which is magnified by climate change.

[22] United Nations Sustainable Development Group, "Policy brief: COVID-19 in an urban world", July 2020.

[23] *The Future of Asian and Pacific Cities: Transformative Pathways towards Sustainable Urban Development* (United Nations publication, Sales No. E.20.II.F.1).

2. Trends and barriers

64. Cities occupy only 2 per cent of the world's land but consume 75 per cent of its resources. Asian cities are expected to contribute more than half of the region's rise in greenhouse gas emissions over the next 20 years.[24] They are also highly vulnerable to the consequences of climate change, including flooding, landslides, heat waves and water shortages. In a report published in 2019, the Intergovernmental Panel on Climate Change outlined the foreseeable sea level rise of the coming decades and its implications for low-lying islands, coasts and coastal communities.[25] Sea level rise and its impacts may disproportionately threaten developing countries and island or archipelagic States, including several member States in the Pacific subregion. In order to assess the climate-related risks, further policy initiatives could be focused on enhancing marine spatial planning and promoting integrated coastal zone management along coastal settlements in Asia and the Pacific.

65. Many Asian cities do not have effective wastewater treatment systems. In the Philippines, for example, only 10 per cent of wastewater is treated. In Indonesia, 14 per cent is treated; in Viet Nam, 4 per cent; and in India, 9 per cent.[26] According to estimates, 75 per cent of solid waste generated in urban areas is collected, but less than 60 per cent finds its way to a disposal site. In most Asian towns and cities, only 10 per cent of solid waste ends up in properly engineered sanitary landfill sites. Additionally, in South-East Asia, plastics entering the ocean can be traced to land-based sources in urban areas, with uncollected waste accounting for 75 per cent of marine plastic pollution, and leakages in waste management systems accounting for 25 per cent.[27]

3. Solutions in four policy areas

66. The cities of 2030, 2050 and 2100 will be very different from today. They will be cities transformed, in demographic composition, implementation of technology and wider ecological contexts. To transform the Asia-Pacific region, with its archetypical chaotic, polluted, inequitable cities, into a competitive, equitable and environmentally sustainable urban region will require a new approach to city development and the support of the secretariat in that regard.

67. On the basis of *The Future of Asian and Pacific Cities: Transformative Pathways towards Sustainable Urban Development* and the deliberations and outcomes of the Seventh Asia-Pacific Urban Forum, held in October 2019, the secretariat has identified four thematic priorities to realize a sustainable urban future in Asia and the Pacific. According to *The Future of Asian and Pacific Cities*, a sustainable urban future will be realized, in the first instance, when urban and territorial planning lays a foundation; and in the second, when resilience measures guard against future risk, smart cities deploy the best technologies to accelerate action, and municipal financing tools enable implementation at scale. In the report, the case is made that getting these four

[24] Asian Development Bank, "Asia's booming cities most at risk from climate change", 6 May 2015.

[25] Abram and others, "Summary for policymakers".

[26] AECOM International Development and the Swiss Institute of Aquatic Sciences and Technology, *A Rapid Assessment of Septage Management in Asia: Policies and Practices in India, Indonesia, Malaysia, the Philippines, Sri Lanka, Thailand and Viet Nam*, prepared for review by the United States Agency for International Development (January 2010).

[27] Ocean Conservancy and McKinsey Centre for Business and Environment, "Stemming the tide: land-based strategies for a plastic-free ocean" (McKinsey and Company, 2015).

essentials right in the cities of today is vital in order to adapt to the demands of tomorrow.

68. Urban and territorial planning is the bedrock of the sustainable post-pandemic city. At any stage of urban development, long-term planning is essential to the mobilization of stakeholders and investments to co-produce solutions for a given city's future growth and transformation in order to implement the 2030 Agenda.

69. Thoughtful planning has been key for the Asia-Pacific cities that rank among the most liveable, sustainable and economically successful in the world. Cities will need to be planned to withstand all forms of short-term shocks and long-term stresses, particularly with regard to environmental challenges. To achieve this, sustainability and quality of life need to be integrated into urban and territorial plans, and solutions need to be co-produced with citizens to promote urban growth and regeneration.

70. Sustainable urban and territorial planning provides an opportunity to reduce the negative impacts of cities on the climate system (i.e. reducing the overall carbon footprint) while mitigating the impacts of climate change and extreme events on urban areas through appropriate resilience responses.

71. Urban resilience is a key principle to ensure the future prosperity of Asia-Pacific cities. In the resilient cities of the future, siloes among entrenched city government departments will need to be broken down and collaboration encouraged to address challenges such as economic downturns, migration crises, natural disasters and extreme events. Nature-based infrastructure solutions and the engagement of the informal economy are potent tools that city authorities can employ to create sustainable and resilient outcomes.

72. Technology has become an irreplaceable component of twenty-first century lifestyles, one that extends to city management. So-called smart cities that rely on advanced technology now have endlessly customizable tools for monitoring and modelling nearly every aspect of urban life. Such technology can be empowering, but the volume of data and interoperability across urban systems can be challenging for many local governments.

73. In the smart cities of the future, digital infrastructure and innovative applications of technology will be supported by stronger governance systems, with the goal of improving the quality of life of citizens while protecting everyone's safety and taking into account gender and disability awareness.

74. In future smart cities, there will be a need to focus on improving outcomes for residents and to harness the creativity of the technology sector in shaping the integration of the physical and digital environments.

75. A well-planned, resilient vision for a sustainable city that employs inclusive technology will not be realized without adequate, long-term and predictable municipal financing. Urban finance provides the opportunity to scale up planning, resilience and smart cities.

76. The world of municipal finance is vast and complex, but there are specific areas, such as land-linked financing and pollution pricing, in which cities can achieve discrete objectives through fiscal means. Innovative urban finance has been pursued in cities of all sizes and even smaller towns. Indeed, urban financing options are available to all types of local governments.

77. In the sustainable cities of the future, more creative financing solutions will be employed in infrastructure improvement projects. With costs increasingly too great for one company or even one government to afford alone, and with projects increasingly dependent on other related work, cross-sector collaboration and coordination is becoming the norm. Building the right networks through public-private partnerships or community finance initiatives, learning how to measure risk and return and making the right funding available to achieve sustainable outcomes will be critical to improving city operations.

78. The Seventh Asia-Pacific Urban Forum was held in Penang, Malaysia, from 15 to 17 October 2019. Held every four to five years, the Forum is the largest regional gathering of urban stakeholders. The Forum was organized by ESCAP, the United Nations Human Settlements Programme (UN-Habitat), Urbanice Malaysia, the Ministry of Housing and Local Government of Malaysia, the City Council of Penang Island and the Government of Penang. It brought together more than 5,000 participants from 60 countries, including 30 ESCAP member States, to discuss persistent and emerging issues related to sustainable urban development in the Asia-Pacific region, with a particular focus on priority issues to support local implementation of the 2030 Agenda and the New Urban Agenda.

79. The Forum concluded with declarations of actions from stakeholder groups and tangible voluntary commitments from a variety of local, national and global institutions to support cities. The Forum also marked the launch of the Penang Platform for Sustainable Urbanization, which serves as an action-oriented multi-stakeholder platform. Supported by ESCAP, the Penang Platform is to be monitored and then followed-up at the eighth Forum.

III. Development pathways to build back better by accelerating actions across environmental domains

80. The COVID-19 pandemic has exposed a number of challenges related to the four environmental domains addressed in the present document. However, it has also demonstrated that significant reversals of negative environmental impacts are possible in a short period of time, as evidenced by drastic, if temporary, reductions in carbon dioxide emissions and improved air quality.

81. Recovery strategies that place environmental priorities at the core of building back better will provide opportunities to raise climate ambition, safeguard ecosystems, ensure clean air and build sustainable cities. Building back better will strengthen resilience at all levels of government, thereby facilitating accelerated action in all four domains through integrated policy solutions.

82. Investments by member States in recovery packages could secure long-term environmental benefits across the domains if targeted at priority policy actions such as decarbonization in energy and transport, urban planning that integrates environmental actions, regulations to improve air quality, and ecosystem conservation. Local authorities play an important role in developing relevant policy responses for all the domains and must partner with national Governments to design recoveries that build back better.

83. Support for local authorities to strengthen urban and territorial planning, build urban resilience, deploy smart technologies and build capacities to finance sustainable urban development can accelerate environmental actions and contribute to the implementation of the 2030 Agenda and the achievement of the Paris Agreement targets. Without determined action by local authorities in the above-mentioned areas of city planning in the future, progress on climate change

and air pollution will be limited, and urban sprawl will continue to cause ecosystem degradation.

84. Technology innovations can be leveraged to support building back better. Member States can use innovative data sources and deploy emerging technologies, such as satellite imagery and remote sensing, machine learning, digital visualization tools and smart city technologies, to identify environmental hotspots and facilitate informed and appropriate policy responses. For any policy option to be effective, member States will need to institute and strengthen environmental governance to facilitate accelerated action. Regional cooperation also supports acceleration across the four environmental domains. Regional platforms such as the Asia-Pacific Climate Week provide an opportunity to conduct voluntary reviews of nationally determined contributions, facilitate peer-to-peer learning and exchange national and city experiences.

85. Regional cooperation on mechanisms such as carbon pricing and trading instruments and carbon markets can help to identify financing opportunities for nationally determined contributions. The issue-based coalition on climate change mitigation and air pollution that ESCAP convened in coordination with UNEP is currently developing a feasibility study on an ASEAN carbon market. Coupled with vertical integration of climate action and subregional needs-based finance strategies, carbon markets could drive development and the implementation of more ambitious nationally determined contributions.

86. Regional dialogues on carbon pricing under the Collaborative Instruments for Ambitious Climate Action initiative of the United Nations Framework Convention on Climate Change secretariat are being organized in partnership with ESCAP, UNEP and the Asian Development Bank. The dialogues are providing an opportunity for member States to better understand how adopting carbon pricing instruments, both at the national and regional levels, will benefit the implementation of nationally determined contributions. Such instruments, coupled with carbon markets, have the potential to generate considerable funding to support the implementation and scaling up of nationally determined contributions.

87. Owing to its unique position, ESCAP can play a key role regionally in promoting the effective, integrated and sustainable management of natural systems within the framework of the implementation of the 2030 Agenda and other commitments such as the Paris Agreement, the New Urban Agenda, the outcome document of the United Nations Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development, entitled “Our ocean, our future: call for action”, and the post-2020 global biodiversity framework, which will be considered for adoption at the 15th meeting of the Conference of the Parties to the Convention on Biological Diversity.

88. The secretariat supports the development of innovative tools and policies and provides capacity-building support to member States to accelerate actions across environmental domains. Its support includes, for example, an online greenhouse gas emissions inventory tool; accelerated implementation of Sustainable Development Goal 14 implementation; practical support for meaningful stakeholder engagement in environmental policymaking; identification of city-specific air pollution causes to inform mitigation policies; and innovative remote sensing tools to generate hotspot maps of plastics entering urban waterways.

IV. Issues for consideration by the Committee

89. The Committee on Environment and Development may wish to consider suggested regional activities to enhance the ambition of climate actions, support the mainstreaming of clean air solutions, enhance the health of ecosystems and advance the outcomes of the Seventh Asia-Pacific Urban Forum with a view to promoting sustainable urban development and providing the secretariat with further guidance.

90. The Committee may also wish to consider suggested policies that member States could adopt to institute and strengthen regional environmental governance.