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## Sustainable development

### Combating sand and dust storms

#### Report of the Secretary-General

##### *Summary*

The present report, submitted pursuant to General Assembly resolution [76/211](#) on combating sand and dust storms, provides details on developments within the United Nations system since the issuance of the previous report of the Secretary-General on the subject ([A/76/219](#)) and covers the period from mid-2021 to mid-2022. The report highlights activities and initiatives undertaken by United Nations entities, Member States and a range of stakeholders and underscores achievements made during the reporting period in the following four principal areas: cross-cutting activities; monitoring, prediction and early warning; impact mitigation, vulnerability and resilience; and source mitigation.

The transboundary hazards posed to human society by sand and dust storms continue to be felt in numerous parts of the world, and the need grows for more concerted action at the national and international levels to reduce the adverse impacts of sand and dust storms on many sectors. Significant gaps remain in data, information and understanding of how human society interacts with the global dust cycle. However, actions by United Nations system entities to assist countries in tackling sand and dust storm issues have gathered momentum in the period under review. The secretariat of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, has now finalized and published its Sand and Dust Storm Compendium. Two new regional nodes have been initiated in the Sand and Dust Storm Warning Advisory and Assessment System of the World Meteorological Organization, for Gulf Cooperation Council countries and West Asia. The United Nations Human Settlements Programme (UN-Habitat) has been instrumental in building a bilateral transboundary collaboration between Iraq and Kuwait to improve resilience to sand and dust storms. The interregional project of the Food and Agriculture Organization of the United Nations, focusing on sand and dust storms in agriculture, is approaching its conclusion. The endorsement by States members of the Economic and Social Commission for Asia and the Pacific of the Regional Plan of Action on Sand and Dust

\* [A/77/150](#).



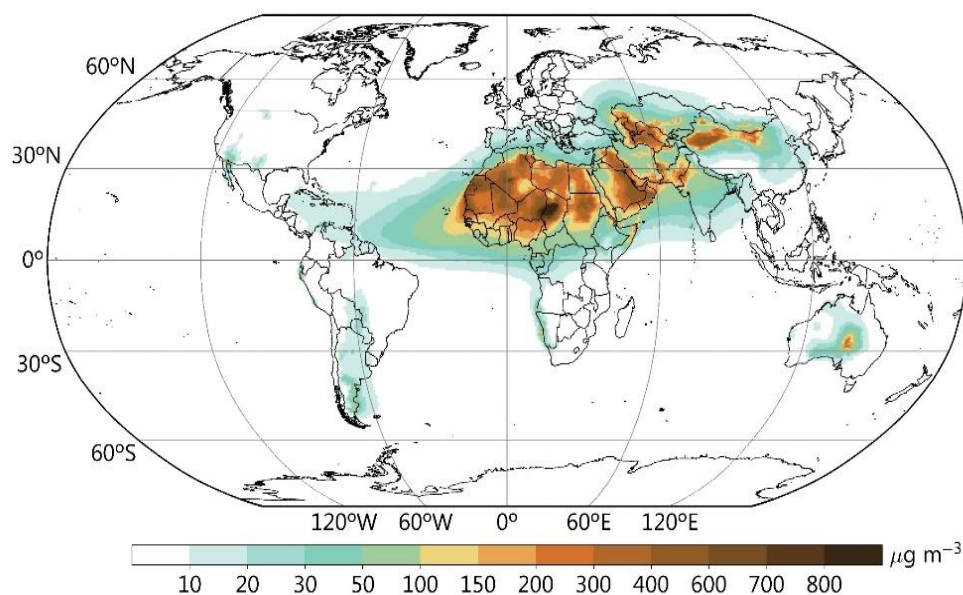
Storms in Asia and the Pacific reflects the importance of the issue in the Asian and Pacific region. Several member organizations of the United Nations Coalition on Combating Sand and Dust Storms have collaborated to prepare an early-stage programme concept note linking the mitigation of sand and dust storm source areas related to agriculture to national voluntary targets for land degradation neutrality, but mobilization of the resources required for the proposed activities remains a critical next step.

## I. Introduction

1. In its resolution [76/211](#) on combating sand and dust storms, the General Assembly requested the Secretary-General to submit to it at its seventy-seventh session a report on the implementation of the resolution and encouraged the relevant entities of the United Nations, within their respective mandates and resources, and donors to continue to provide capacity-building and technical assistance for combating sand and dust storms and to continue to support the implementation of the national, regional and global action plans of the affected countries. The Assembly also requested the Secretary-General to further encourage the United Nations Coalition on Combating Sand and Dust Storms to conduct its priority activities as identified by the Coalition's five working groups, which are knowledge-sharing, capacity-building, training, awareness-raising and support for the formulation of national, regional and interregional plans, to mitigate sand and dust storm hazards, and to encourage the Coalition to enhance resource mobilization efforts so as to increase voluntary contributions to the Coalition and its member agencies. The present report details developments since the issuance of the fourth report of the Secretary-General on the subject ([A/76/219](#)) and covers the period from mid-2021 to mid-2022.

2. Sand and dust storms continue to present a formidable challenge to achieving sustainable development in its three dimensions – economic, social and environmental. Each year, an estimated 2,000 million tons of mineral dust are emitted into the atmosphere from all continental land surfaces.<sup>1</sup> Most sand and dust storms occur in a broad swath of drylands that stretches from West Africa across the Middle East to North-East Asia (see figure), but the impacts are often felt far beyond the drylands because dust is frequently transported over great distances, across national boundaries and periodically between continents.

### Annual mean surface concentration of mineral dust in 2021



Source: World Meteorological Organization, Airborne Dust Bulletin, No. 6, July 2022.

<sup>1</sup> United Nations Environment Programme (UNEP), World Meteorological Organization and secretariat of the Convention to Combat Desertification, *Global Assessment of Sand and Dust Storms* (Nairobi, UNEP, 2016).

3. The hazards associated with sand and dust storms are numerous and varied. Large-scale events can spread across millions of square kilometres, affecting multiple countries. Their immediate impacts commonly include interruptions to road, air, rail and sea transport, the closure of schools and businesses, the loss of solar power output from photovoltaic systems, and hospitals experiencing a surge of respiratory complaints and ophthalmic emergencies, as well as vehicular trauma due to an increase in motor vehicle accidents.<sup>2</sup>

4. Early 2022 was marked by some notable large-scale sand and dust storms with typical transboundary impacts. Over the first four months of 2022, multiple Saharan dust storms affected Europe, turning skies orange and depositing layers of fine dust on cars and buildings. One of the storms resulted in historically high concentrations of atmospheric particulate matter in many parts of Spain and extensive cloud cover extending from the Iberian Peninsula to the Arctic and parts of Asia, which lasted for about a week. Formation of high-altitude cirrus clouds was enhanced by the desert dust particles acting as nuclei for cloud formation.<sup>3</sup> A series of severe sand and dust storms also occurred in Iraq and other parts of the Middle East from the beginning of April.<sup>4</sup> Disruptions to daily life and poor air quality were experienced throughout the Gulf region. These immediate effects of sand and dust storms also accumulate to create longer-term costs. They include soil erosion and reduced soil quality, which undermine the sustainability of agriculture, reducing its capacity to meet the needs of present and future generations; chronic health problems; and disruption of global climate regulation services.

5. In the contribution of Working Group II to the Intergovernmental Panel on Climate Change Sixth Assessment Report,<sup>5</sup> released on 28 February 2022, it is stated that the impacts of climate change on sand and dust storm activity are projected to be substantial, albeit with large regional variability, and current climate models are poor at projecting the impact of climate change on sand and dust storms. Higher dust emissions are consistent with climate change projections indicating an expansion in the global area of drylands and increased drought risk. Land degradation, loss of vegetative cover, and drying of water bodies in semi-arid and arid areas will contribute to sand and dust activity in the future.

6. The report of the Secretary-General on Our Common Agenda (A/75/982), presented to the General Assembly on 10 September 2021, highlights the triple planetary crisis of climate change, biodiversity loss and pollution, as well as the coordinated and concerted global actions needed to address the crisis. Sand and dust storms are both a result of the aforementioned crisis and a contributing factor. They should therefore be one of the key items on the agenda for global attention between now and 2030 in order to leave no one behind.

7. In providing information and updates on global efforts to combat sand and dust storms, in alignment with the Sustainable Development Goals, the present report draws on contributions from the Food and Agriculture Organization of the United Nations (FAO), the secretariat of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, the Economic and Social Commission for Asia and the Pacific (ESCAP), the Asian and Pacific Centre for the Development of Disaster

<sup>2</sup> Nick Middleton and others, "Synoptic causes and socioeconomic consequences of a severe dust storm in the Middle East", *Atmosphere*, vol. 12, October 2021.

<sup>3</sup> See <https://atmosphere.copernicus.eu/historical-saharan-dust-episode-western-europe-cams-predictions-accurate> and <https://earthobservatory.nasa.gov/images/149645/dusty-storm-clouds-over-europe>.

<sup>4</sup> See <https://earthobservatory.nasa.gov/images/149838/persistent-dust-storms-batter-iraq>.

<sup>5</sup> Available at [www.ipcc.ch/report/ar6/wg2/](http://www.ipcc.ch/report/ar6/wg2/).

Information Management of ESCAP, the World Meteorological Organization (WMO), the World Bank, the United Nations Human Settlements Programme (UN-Habitat), the World Health Organization (WHO), the International Organization for Migration (IOM) and the United Nations Environment Programme (UNEP).

## **II. Developments since the issuance of the fourth report of the Secretary-General on combating sand and dust storms**

### **A. Cross-cutting developments**

8. The United Nations Coalition on Combating Sand and Dust Storms, which was officially launched in 2019, continues its efforts to move from the planning to the implementation stage under FAO leadership. At its two-day online meeting held on 13 and 14 October 2021, the Coalition's five working groups consolidated their common priority themes, which are:

- Identifying and analysing sources of sand and dust storms
- Identifying and implementing good practices for source and impact mitigation
- Identifying vulnerable places and vulnerable populations
- Advising on policy – helping countries to develop plans as part of existing frameworks, such as the Sendai Framework for Disaster Risk Reduction 2015–2030
- Focusing on transboundary mechanisms, given that sand and dust storms represent a transboundary issue
- Enhancing cooperation, coordination and data- and information-sharing
- Strengthening countries' capacities to tackle sand and dust storms

9. Building on the outputs of several sand and dust storm-related projects implemented by Coalition members, the cross-divisional task team on sand and dust storms at FAO has worked with colleagues from the secretariat of the Convention to Combat Desertification, the Global Mechanism, the United Nations Development Programme (UNDP) and ESCAP and with other leads of the Coalition working groups to put together a programme proposal for combating sand and dust storms to enhance food security and achieve land degradation neutrality that aims to achieve land degradation neutrality through the mitigation of sand and dust storm source areas related to agricultural activities.

10. The agriculture sector is one of the major anthropogenic drivers of sand and dust storms, through poor land and water management, desertification and land degradation, but sand and dust storms also have direct negative impacts on agriculture. The main objective of the proposed programme is to strengthen the resilience of agriculture-dependent communities affected by increasing exposure to climate change-enhanced risks and impacts of sand and dust storms while reducing and/or reversing land degradation. The programme will simultaneously assist countries in fulfilling their national voluntary targets to achieve land degradation neutrality as contributions towards achieving target 15.3 of the Sustainable Development Goals. Importantly, expected results and activities of the proposed programme would be implemented at the national and local levels, as well as at the regional or interregional level because of the transboundary nature of the sand and dust storm hazard.

11. The United Nations Coalition on Combating Sand and Dust Storms has also put efforts into raising awareness about the sand and dust storm issue, knowledge-sharing, understanding country needs related to sand and dust storms, and identifying gaps in

knowledge of sand and dust storms and how to mitigate their impacts, while at the same time enhancing the visibility of the Coalition's work. With these objectives in mind, the Coalition has produced a video and a fact sheet highlighting the sand and dust storm issue and organized an online side event prior to the twenty-sixth session of the Conference of the Parties to the United Nations Framework Convention on Climate Change, on 30 September 2021, entitled "Sand and dust storms: a critical climate change adaptation issue". The session was attended by 122 participants from 29 countries and representatives from 7 United Nations bodies. A thematic day on sand and dust storms, 16 May 2022, was also organized by the Coalition during the fifteenth session of the Conference of the Parties to the Convention to Combat Desertification, held in Abidjan. It brought together several Member States and other stakeholders to raise awareness, exchange knowledge and inspire dialogue and collaboration on the issue. The day resulted in an enhanced understanding of the impacts associated with sand and dust storms, the relevant mitigation policies and practices and how they can be integrated into national efforts towards land degradation neutrality, and the importance of appropriate resource mobilization.

12. The United Nations Coalition on Combating Sand and Dust Storms was invited to continue to assist affected countries in developing and implementing national and regional policies on sand and dust storms, including early warning, risk assessment and anthropogenic source mitigation in decision 26/COP.15 of 20 May 2022, adopted at the fifteenth session of the Conference of the Parties to the Convention to Combat Desertification and entitled "Follow-up on policy frameworks and thematic issues: sand and dust storms".

13. In the Asian and Pacific region, the States members of ESCAP, in accordance with the decision of the Governing Council of the Asian and Pacific Centre for the Development of Disaster Information Management at its sixth session, and based on further consultation with member States, endorsed the Regional Plan of Action on Sand and Dust Storms in Asia and the Pacific at the seventy-eighth session of the Commission, in May 2022. The evidence base for the Regional Plan was provided by a comprehensive study, *Sand and Dust Storms Risk Assessment in Asia and the Pacific* (see sect. B below), along with in-depth subregional and thematic consultations with affected countries. The Regional Plan is a strategic framework and reference for countries in Asia and the Pacific region to take action at the national and regional levels, in the context of multi-hazard disaster risk reduction, to reduce the negative impact of sand and dust storms and identify anthropogenic measures that could contribute to, or mitigate, their formation and intensity. The Regional Plan, which has an initial duration of five years, includes three operational objectives:

- (a) Improve the understanding of the socioeconomic impact of sand and dust storms to accurately inform policies and investments to reduce their impact and enhance source mitigation;
- (b) Extend the monitoring system and improve the early warning system, with an impact-based focus, to forecast sand and dust storms in a timely manner and enable targeted measures to minimize exposure and reduce risks;
- (c) Put in place coordinated regional actions in the most at-risk and exposed geographical areas to mitigate the risk of and exposure to sand and dust storms.

14. A bilateral transboundary collaboration was initiated between Iraq and Kuwait in October 2021, when UN-Habitat signed a grant agreement with the Kuwait Fund for Arab Economic Development to finance a project entitled "Improved resilience to transboundary sand and dust storms in Kuwait and Iraq", with a total value of \$13.5 million. The four-year project aims to rehabilitate land in two areas of southern Iraq, Muthanna and Dhi Qar provinces, which have become sand and dust storm hotspots, affecting air quality in Kuwait and several other Gulf countries. The project

will identify the main causes of sand and dust storms and provide solutions in the areas of Iraq and Kuwait suffering from such storms. The project has established partnerships with several key entities in Iraq and Kuwait, including government ministries and departments, meteorological services, universities and Kuwait Petroleum Corporation, and the active involvement of all relevant stakeholders will be ensured.

15. The importance of sand as a strategic resource is discussed in a report produced by UNEP, *Sand and Sustainability: 10 Strategic Recommendations to Avert a Crisis*,<sup>6</sup> launched on 26 April 2022. The discussion on sand resources and their limitations and challenges is relevant to some of the issues surrounding sand and dust storms. The report highlights how sand plays a strategic role in delivering ecosystem services, building vital infrastructure for economic development, providing livelihoods within communities and maintaining biodiversity.

## **B. Monitoring, prediction and early warning**

16. In accordance with resolution 19 (Cg-18), entitled “Enhancing cooperation for monitoring and forecasting sand and dust storms”, adopted at the eighteenth World Meteorological Congress, in 2019, WMO has continued the further development, extension and implementation of its Sand and Dust Storm Warning Advisory and Assessment System, which provides sand and dust storm forecasts for early warning systems in various countries. Two new regional nodes have been initiated. One node, for the Gulf Cooperation Council countries, is hosted by the Regional Sand and Dust Storms Early Warning and Advisory Centre at the National Centre for Meteorology of Saudi Arabia. The other, the West Asia regional node, has been co-initiated by the Islamic Republic of Iran and Türkiye. An agreement to establish the West Asia regional node was signed by the Islamic Republic of Iran Meteorological Organization and the Turkish State Meteorological Service on 8 March 2022. The Gulf Cooperation Council regional node, which is operating with a contribution from UNEP through a resident expert, hosted an international workshop on sand and dust storms in Jeddah, Saudi Arabia, on 1 and 2 June 2022, with the participation of the United Nations Coalition on Combating Sand and Dust Storms.

17. The Pan-American node of the Sand and Dust Storm Warning Advisory and Assessment System has contributed to a number of new sand and dust storm projects. Prominent among them is the Earth Surface Mineral Dust Source Investigation (EMIT) project, which is designed to help scientists to better understand the role of airborne dust in heating and cooling the atmosphere by accurately mapping the mineral composition of dryland areas that produce dust. The EMIT instrument, developed by the National Aeronautics and Space Administration (NASA) of the United States of America, is mounted on the exterior of the International Space Station and was launched in mid-2022. A year’s worth of the new spectroscopic measurements, mineral maps and related data products will be used in Earth system models to investigate the radiative forcing impacts of atmospheric mineral dust in the Earth system. NASA is also involved in a project with WMO, WHO and the Pan American Health Organization that aims to build a catalogue of potential dust hazards in the Pan-American region.

18. The Northern Africa-Middle East-Europe regional centre and node of the Sand and Dust Storm Warning Advisory and Assessment System, which launched a redesigned website in January 2022, has been very active in capacity-building activities. These include online training workshops on the use of satellite products

<sup>6</sup> Available at [www.unep.org/resources/report/sand-and-sustainability-10-strategic-recommendations-avert-crisis](https://www.unep.org/resources/report/sand-and-sustainability-10-strategic-recommendations-avert-crisis).

jointly organized with the European Organization for the Exploitation of Meteorological Satellites, held from 9 to 17 November 2021 and from 25 to 27 January 2022. It has also continued the series of scientific webinars initiated by the International Network to Encourage the Use of Monitoring and Forecasting Dust Products, known as inDust, a network created under the European Cooperation in Science and Technology programme, funded by the European Union. Although inDust ended on 30 October 2021, its outcomes and heritage have been transferred to the Barcelona Supercomputing Centre, which hosts the Northern Africa-Middle East-Europe regional centre and node.

19. The secretariat of the Convention to Combat Desertification has refined its global sand and dust storm source map<sup>7</sup> in collaboration with UNEP and WMO, with the support of selected experts from the Science-Policy Interface of the Convention. The 1-km-resolution map is built upon open-access global data sets and information, including remote sensing imagery. It is intended to provide a set of georeferenced numerical maps to support national approaches to integrating sand and dust storm source mitigation measures into the land degradation neutrality target-setting process and other sand and dust storm impact mitigation activities. The map was used in a recent study that identified and quantified the intensity of 64 sources of sand and dust storms in the high latitudes ( $\geq 50^\circ$  N and  $\geq 40^\circ$  S).<sup>8</sup>

20. In response to requests from members of the General Assembly (see resolution 70/195) and ESCAP (see resolution 72/7), the Asian and Pacific Centre for the Development of Disaster Information Management conducted a comprehensive study entitled *Sand and Dust Storms Risk Assessment in Asia and the Pacific*<sup>9</sup> to support policymakers, with a view to concerted action at the regional level to reduce risk and strengthen resilience to sand and dust storms. The report was launched by the Executive Secretary of ESCAP in August 2021 at the side event of the seventh session of the Committee on Disaster Risk Reduction. The report was a first attempt of its kind in terms of geographical and thematic scope to assess and analyse the risks posed by sand and dust storms to the health, energy, transport, agriculture and environment sectors in the region. The report was produced in coordination with relevant divisions of ESCAP and the collaboration of experts from various United Nations entities through the United Nations Coalition to Combat Sand and Dust Storms, specifically from WMO, the secretariat of the Convention to Combat Desertification, the United Nations Environment Management Group secretariat and FAO, as well as scientists from renowned universities and research centres globally and national meteorological institutes. The findings of the risk assessment informed the in-depth subregional and thematic consultations with affected countries and led to the development of the Regional Plan of Action on Sand and Dust Storms in Asia and the Pacific.

### C. Impact mitigation, vulnerability and resilience

21. WHO released its updated WHO Air Quality Guidelines on 22 September 2021. The WHO Air Quality Guidelines, which are based on extensive scientific evidence, identify levels of air quality necessary to protect public health, but in the case of particles originating from sand and dust storms, the evidence was deemed too uncertain to support derivation of quantitative air quality guidelines. Nevertheless, experts agreed on a qualitative good practice statement because there was high certainty that implementing certain measures would be beneficial. The measures

<sup>7</sup> Available at <https://maps.unccd.int/sds/>.

<sup>8</sup> Outi Meinander and others, "Newly identified climatically and environmentally significant high latitude dust sources", *Atmospheric Chemistry and Physics Discussions*, December 2021.

<sup>9</sup> Available at <https://apdim.unescap.org/knowledge-hub/sand-and-dust-storms-risk-assessment-asia-and-pacific>.



recommended in the WHO Air Quality Guidelines include 1) to maintain suitable air quality management and dust forecasting programmes, including early warning systems and short-term air pollution action plans to alert the population and provide advice to minimize exposure; 2) to maintain suitable air quality monitoring programmes and reporting procedures, including source apportionment activities to quantify and characterize particulate matter composition to enable local authorities to target local particulate matter emissions from anthropogenic and natural sources for reduction; 3) to conduct epidemiological studies, including those addressing the long-term effects of sand and dust storms, and research activities aimed at better understanding the toxicity of the different types of particulate matter; 4) to implement wind erosion control through the carefully planned expansion of green spaces that considers and is adjusted to the contextual ecosystem conditions; and 5) to minimize local dust sources and the resuspension of dust, such as by cleaning the streets in those urban areas characterized by a relatively high population density and low rainfall to prevent resuspension by road traffic as a short-term measure after intense sand and dust storm episodes. WHO is coordinating an expert group on desert dust, which is currently developing guidance for exposure assessment in health studies and finalizing a review of the various health outcomes associated with dust exposure.

22. Many other uncertainties remain in the understanding of how the global dust cycle interacts with human society, but some recent progress has been made in the areas of economic impact assessment of sand and dust storm hazards. In a study published by the World Bank in 2021, *The Value of Landscape Restoration in Uzbekistan to Reduce Sand and Dust Storms from the Aral Seabed*, the economic losses due to sand and dust storms were estimated for one region of Uzbekistan adjacent to the Aralkum Desert, a man-made desert on the desiccated seabed of the Aral Sea. Up to 75 million tons of sand, dust, and salt are blown from the Aralkum across Central Asia annually, generating economic losses of over \$44 million every year in the Republic of Karakalpakstan, a sum that equates to 2.1 per cent of that region's gross domestic product (GDP). The study concluded that under existing conditions and assuming a planning period of 20 years, inaction will cost Karakalpakstan approximately \$844 million. Of that total, 83 per cent is on-site losses and forgone on-site benefits of ecosystem services and the remaining 17 per cent is off-site losses. The study concluded that landscape restoration interventions in the Aralkum can prevent ecosystem services losses and generate additional benefits of about \$39 million per year – equivalent to 1.9 per cent of Karakalpakstan's GDP. The World Bank's Resilient Landscapes in Central Asia programme aims to assist rural communities across Central Asia in restoring landscapes (see **Source mitigation** below).

23. Economic impact assessment has also been a part of FAO's interregional project entitled *Catalysing investments and actions to enhance resilience against sand and dust storms in agriculture*, which was initiated in September 2020. A survey of just over 500 herder households in one rural district of the Gobi Desert in Mongolia found that 87 per cent of households had lost livestock in a fierce two-day sand and dust storm in March 2021. The loss of nearly 34,000 animals was valued at \$1.2 million using local market prices, amounting to 13 per cent of the total value of livestock owned by an average herder household in the district, a considerable impact from a single event. The effects on rangeland were also serious and had long-lasting consequences because of the considerable recovery time for pastures, but the economic impact was impossible to quantify. The study also estimated the value of livestock lost nationally in the sand and dust storm of March 2021: \$69.3 million. The assessment in Mongolia is one input to an appraisal of the interactions between sand and dust storms and the agriculture sectors, including source and impact mitigation interventions at both the farm and policy levels, a report that will be published in 2022. The project, developed in response to requests from six countries (Algeria, China, Iran (Islamic Republic of), Iraq, Kuwait and Mongolia), is designed to provide

the foundation for a large-scale follow-up programme intended to scale up resilience-building against sand and dust storms.

24. The secretariat of the United Nations Convention to Combat Desertification has now finalized and published the *Sand and Dust Storms Compendium: Information and Guidance on Assessing and Addressing the Risks*<sup>10</sup> in collaboration with several United Nations system entities and partners: WMO, WHO, UNEP, UN-Women, FAO, UNDP, and the United Nations Office for Disaster Risk Reduction. The Sand and Dust Storms Compendium includes approaches and methodology frameworks on data collection, assessment, monitoring and early warning, impact mitigation and preparedness, and source mapping and anthropogenic source mitigation that are required for the development and implementation of policies related to sand and dust storms at the subnational, national, regional and global levels, taking into account the principles set out in the Policy Advocacy Framework to Combat Sand and Dust Storms<sup>11</sup> and the cross-sectoral and multidisciplinary nature of the impact that sand and dust storms can cause to societies, economies and the environment.

25. The secretariat has also made progress on its toolbox for sand and dust storms, in collaboration with several members of the United Nations Coalition on Combating Sand and Dust Storms – including ESCAP, FAO, UNDP and WMO – which will provide stakeholders with easy access to tools, methodologies, approaches, case studies and other resources to support the development and implementation of sand and dust storm policies and plans at various levels. Material from the Sand and Dust Storms Compendium and the toolbox for sand and dust storms are feeding into a set of capacity-building training materials including associated e-learning courses, that are under development. The training courses and supporting material are targeted at individuals with a responsibility for dealing with sand and dust storms (including the United Nations Convention to Combat Desertification National Focal Points). The focus is on raising awareness about the challenges to society posed by sand and dust storms and developing and defining ways and means to address these challenges. In lieu of this, a training workshop was organized in Jeddah, Saudi Arabia, on 12–14 April 2022 to support capacity-building of relevant experts working on sand and dust storms.

## D. Source mitigation

26. The secretariat of the United Nations Convention to Combat Desertification has been assisting in the development of national and regional plans, policy and frameworks in accordance with the Convention's Policy Advocacy Framework to Combat Sand and Dust Storms, with a focus on impact mitigation, including anthropogenic source management. Several pilot projects have been initiated and implemented with partners at the national and regional levels in Nigeria, Central Asia (Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, Uzbekistan) and North-East Asia (China, Mongolia, Republic of Korea, Russian Federation) to formulate national and/or regional sand and dust storm plans and strategies that can lay the foundation for accelerating immediate actions on the ground. The objective is to strengthen the preparedness and resilience of affected populations while promoting cooperation and collaboration among concerned stakeholders at all levels.

27. The secretariat has been developing, in collaboration with FAO, voluntary policy guidelines to assist affected countries in the integration of sand and dust storms into the related policy and development agendas, including land degradation

<sup>10</sup> Available at [www.unccd.int/resources/publications/sand-and-dust-storms-compedium-information-and-guidance-assessing-and](http://www.unccd.int/resources/publications/sand-and-dust-storms-compedium-information-and-guidance-assessing-and).

<sup>11</sup> Available at [www.unccd.int/sites/default/files/sessions/documents/2017-08/ICCD\\_COP%2813%29\\_19-1711042E.pdf](http://www.unccd.int/sites/default/files/sessions/documents/2017-08/ICCD_COP%2813%29_19-1711042E.pdf).

neutrality, focusing on anthropogenic source mitigation while mobilizing expertise across sectors and disciplines in the development and implementation of sand and dust storm-related policy and plans. The aim is to provide affected countries with further information and guidance in creating the enabling environment that is an essential precursor to reduce the risk of sand and dust storms in a connected way, utilizing multiple tools provided through the toolbox for sand and dust storms and ultimately contributing to the positive changes of reducing and mitigating the human impacts caused by sand and dust storms.

28. Combating sand and dust storms at the source has also been an important element of capacity-building and technical assistance provided by a number of United Nations system entities. Recognizing that sand and dust storm hazards and the adverse effects of climate change will increase the levels of displacement and reshape human mobility patterns, IOM and its partners have implemented an agroecology-based livelihoods initiative to promote sustainable agricultural practices with migrants, specifically in West Africa. The work is in line with IOM's strategic objectives, part of the Institutional Strategy on Migration, Environment and Climate Change 2021–2030,<sup>12</sup> published on 29 October 2021, which include developing solutions in the context of climate change, environmental degradation, and natural hazard-induced disasters for people to move, for people on the move, and for people to stay.

29. The World Bank also sees sustainable and resilient landscapes as critical to reducing poverty, migration, and conflicts and to creating more resilient livelihoods. This is especially relevant in Africa, where the World Bank has committed to invest \$5.6 billion in the 11 countries that are part of the Great Green Wall initiative, as well as continuing support for project implementation and preparation in the Middle East and North Africa region to improve sustainable natural resource management and promote livelihood diversification in targeted ecosystems in Tunisia (forests, rangelands and oases) and tackling health issues related to air pollution, including sand and dust storms in Egypt. Helping affected rural communities in restoring landscapes across Central Asia is the aim of the World Bank's Resilient Landscapes in Central Asia programme, otherwise known as RESILAND CA+. This regional umbrella programme, established in 2019, supports both analytics and advisory services as well as investment projects in Kazakhstan, Kyrgyz Republic, Tajikistan and Uzbekistan. Through RESILAND CA+, the World Bank has been working with governments and local communities towards approaches to land restoration that address sand and dust storms by investing in productive landscapes to generate income by reversing land degradation.

30. The United Nations Decade on Ecosystem Restoration 2021–2030,<sup>13</sup> led by FAO and UNEP, aims to accelerate action on the restoration of degraded lands, and will directly address land degradation through the World Restoration Flagships as primary case studies of up-scaling best practices for maximum impact, including for the Great Green Wall.

31. Building resilience to sand and dust storms while simultaneously improving the urban environment is the cornerstone of continuing work by the UN-Habitat office in Kuwait under the slogan "Kuwait plants". The campaign, initiated in 2019, encourages all members of society to plant trees in their surroundings as part of efforts to combat and mitigate the effect of climate change, combat desertification and sand and dust storms.

<sup>12</sup> Available at [https://environmentalmigration.iom.int/sites/g/files/tmzbd11411/files/documents/IOM-Institutional-Strategy-MECCC\\_0.pdf](https://environmentalmigration.iom.int/sites/g/files/tmzbd11411/files/documents/IOM-Institutional-Strategy-MECCC_0.pdf).

<sup>13</sup> See [www.decadeonrestoration.org/](http://www.decadeonrestoration.org/).

### III. Conclusions

32. The hazards posed to human society by sand and dust storms continue to be felt in numerous parts of the world, and the need grows for more concerted action at the national levels to reduce the adverse impacts of sand and dust storms on many sectors. The transboundary nature of many sand and dust storms also underscores the necessity for cooperation beyond actions at the national levels, requiring strengthened collaboration and robust partnerships at subregional, regional and interregional levels. This need is recognized by the United Nations Coalition on Combating Sand and Dust Storms, which is organizing a collaborative United Nations system response to these challenges. The Coalition has demonstrated commitment to the task at hand and plans to move forward with its strategy and overall action plan, but mobilization of the resources required for these activities remains a critical next step.

33. Actions by United Nations system entities, designed to assist countries in tackling sand and dust storm issues, have gathered momentum in the period under review. The secretariat of the United Nations Convention to Combat Desertification has now finalized and published its *Sand and Dust Storms Compendium* and is making progress on its toolbox for sand and dust storms. Two new regional nodes have been initiated in WMO's Sand and Dust Storm Warning Advisory and Assessment System, for Gulf Cooperation Council countries and West Asia. UN-Habitat has been instrumental in building an innovative four-year bilateral transboundary collaboration between Kuwait and Iraq to improve resilience to sand and dust storms. FAO's interregional project focusing on sand and dust storms in agriculture is approaching its conclusion in providing the foundation for a large-scale follow-up programme intended to scale up resilience-building against sand and dust storms. Several member organizations of the United Nations Coalition on Combating Sand and Dust Storms have collaborated to prepare an early-stage programme concept note linking the mitigation of agriculture-related sand and dust storm source areas to national voluntary targets for land degradation neutrality.

34. States members of ESCAP, in their endorsement of the Regional Plan of Action on Sand and Dust Storms in the Asian and Pacific, recognize the importance of the issue in the Asian and Pacific region. It provides a strategic framework and reference for those countries to take action in the context of multi-hazard disaster risk reduction, to reduce the negative impact of sand and dust storms and identify anthropogenic measures that could contribute to, or mitigate, their formation and intensity. The plan's operational objectives highlight the need to further improve the understanding of the socioeconomic impact of sand and dust storms in order to accurately inform policies and investments in an effort to reduce their adverse impacts and enhance source mitigation. This is one of several important subject areas in which significant blanks remain in the map of our knowledge of how human society interacts with the global dust cycle, despite all the efforts made by the United Nations and its Member States on this emergent global disaster risk management issue. Further work remains to be done to fill these gaps in data, information and understanding as part of our mission to achieve the 2030 Agenda for Sustainable Development. Similar plans of action would be appropriate in the other regions plagued by the considerable economic, social and environmental costs associated with sand and dust storms.