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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 [74/226](#) 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/74/263](#)) and covers the period from mid-2019 to mid-2020.

The report highlights activities and initiatives undertaken by United Nations entities, Member States and a range of stakeholders and underscores achievements, including cross-cutting activities, made during the reporting period in the following four principal areas: monitoring, prediction and early warning; impact mitigation, vulnerability and resilience; source mitigation; and cross-cutting developments.

* [A/75/150](#).



I. Introduction

1. In its resolution 74/226 on combating sand and dust storms, the General Assembly requested the Secretary-General to submit to the Assembly at its seventy-fifth session a report on the implementation of the resolution and decided to include in the provisional agenda of that session, under the item entitled “Sustainable development”, the sub-item entitled “Combating sand and dust storms”. In the first report of the Secretary-General on combating sand and dust storms (A/73/306), all relevant bodies, agencies, funds and programmes of the United Nations system were invited to integrate, in their respective cooperation frameworks, operational programmes, measures and actions aimed at combating sand and dust storms so as to address that problem and contribute to the enhancement of, inter alia, capacity-building at the national level, the implementation of regional and subregional projects, the sharing of information, best practices and experiences and the boosting of technical cooperation in the affected countries and countries of origin, to improve the implementation of sustainable land management practices, to take measures to prevent and control the main factors of sand and dust storms and to improve the development of early warning systems as tools to combat sand and dust storms in accordance with their strategic plans. The present report details developments since the issuance of the second report of the Secretary-General on the subject (A/74/263) and covers the period from mid-2019 to mid-2020.

2. A total of 151 countries (77 per cent of all parties to the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa) are affected directly by sand and dust storms, and 45 countries (23 per cent of all parties to the Convention) are classified as sand and dust storm source areas. Every year, an estimated 2,000 million tons of dust are emitted into the atmosphere. In June 2020, there was a historic sand and dust storm event arriving from North Africa to the eastern Caribbean that affected a wide spatial extent of the greater Caribbean area, from the south-east Caribbean to the northern coast of South America and as far north and west as the Yucatan Peninsula of Mexico. While African dust blows across the Atlantic every year, the 2020 event was particularly intense and extensive.¹

3. The hazards associated with sand and dust storms present a formidable challenge to achieving sustainable development in its three dimensions – economic, social and environmental. Short-term costs include those associated with crop damage, livestock mortality, infrastructural damage (to buildings, power and communications), the interruption of transport and communication systems, air and road traffic accidents and the expense of clearing away sand and dust. Longer-term costs include chronic health problems, soil erosion, reduced soil quality, soil pollution through the deposition of pollutants and the disruption of global climate regulation services.² Sand and dust storm events cost up to an estimated \$5.6 billion annually in the Asia-Pacific region.³ A recent study demonstrated that poor air quality caused by Saharan dust led to a 22 per cent increase in infant mortality across Africa as a whole and a 17 per cent increase in West Africa.⁴ Accordingly, addressing the negative impacts of sand and dust storms will contribute to the implementation of the

¹ See <https://public.wmo.int/en/media/news/wmo-issues-airborne-dust-bulletin-historic-event-hits-caribbean>.

² United Nations Environment Programme, *Global Assessment of Sand and Dust Storms* (Nairobi, 2016).

³ Economic and Social Commission for Asia and the Pacific, *Sand and Dust Storms in Asia and the Pacific: Opportunities for Regional Cooperation and Action* (Bangkok, 2018).

⁴ Sam Heft-Neal and others, “Dust pollution from the Sahara and African infant mortality”, *Nature Sustainability* (29 June 2020).

Sustainable Development Goals and the achievement of the associated targets adopted as part of the 2030 Agenda for Sustainable Development (see resolution 70/1). Ensuring that global efforts to achieve sustainable development are not undermined by the multidimensional impacts of sand and dust storms requires an understanding of disaster risk for prevention and mitigation and for the development and implementation of appropriate preparedness and effective response to disasters, as outlined in the Sendai Framework for Disaster Risk Reduction 2015–2030, endorsed in resolution 69/283, and the processes led by the secretariat of the United Nations Convention to Combat Desertification.

4. 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 United Nations Environment Programme (UNEP), the secretariat of the United Nations Convention to Combat Desertification, the World Meteorological Organization (WMO), the United Nations Development Programme (UNDP), the Food and Agriculture Organization of the United Nations (FAO), the World Health Organization (WHO), the United Nations Institute for Training and Research (UNITAR), the Economic and Social Commission for Asia and the Pacific (ESCAP) and the Asian and Pacific Centre for the Development of Disaster Information Management of ESCAP.

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

A. Cross-cutting developments

5. The transboundary nature of sand and dust storms underscores the need for stronger partnership and the strengthening of subregional, regional and interregional cooperation. In response to paragraph 4 of General Assembly resolution 72/225 and paragraph 4 of resolution 74/226, and under UNEP leadership, further progress has been made in the work of the United Nations Coalition on Combating Sand and Dust Storms. The Coalition was established by the United Nations Environment Management Group in September 2018 through an initiative of the Executive Director of UNEP. It was created as an inter-agency network to prepare a United Nations response to sand and dust storms. After the nomination of United Nations entities to the Coalition (including the United Nations Convention to Combat Desertification, UNEP, FAO, UNDP, WMO, WHO and ESCAP, among others) and the preparation of its terms of reference, the Coalition was officially launched during the fourteenth session of the Conference of the Parties to the United Nations Convention to Combat Desertification, held in New Delhi in September 2019. The launch was held as part of Sand and Dust Storms Day, 6 September 2019, in cooperation with the Convention. Sand and Dust Storm Day brought together several Member States and other stakeholders to raise awareness and inspire dialogue and collaboration on the issue among various stakeholders.

6. Subsequently, the meetings of the Coalition were organized to consider and agree on the Coalition's 2019–2022 strategy and action plan. Under the action plan, the Coalition members will be working together in four working groups in four key areas: inter-agency collaboration, awareness-raising, knowledge and information exchange and resource mobilization. The activities of the working groups will be focused on the life cycle of sand and dust storms through a disaster management approach.

7. Having established and launched the Coalition and taken it to the next phase, the Executive Director of UNEP and the Director General of FAO have agreed to

transfer the leadership and hosting of the Coalition from UNEP to FAO as of 1 July 2020. The Coalition met online on 2 July 2020 to adopt the above-mentioned strategy and action plan and agreed on the follow-up thereto. United Nations agencies participating in the Coalition supported the drafting of decision 25/COP.14 of 12 September 2019 entitled “Follow-up on policy frameworks and thematic issues: sand and dust storms”, including its review by the Convention’s Gender Caucus to ensure that gender considerations had been adequately addressed. The decision called for the establishment of a thematic programme network and the continued collaboration, particularly within the framework of the Coalition, to assist affected countries in mitigating and adapting to the effects of sand and dust storms.

8. An example of the transboundary collaborative work promoted by the Coalition is the interregional project on catalysing investments and actions to enhance resilience against sand and dust storms in agriculture, for which FAO has secured funding. Project implementation will begin in 2020 with the support of several research institutes and six countries that are major contributors to dust emissions, victims of such emissions or both and that face significant drawbacks in terms of sustainable development and future food security. Based on the project’s findings, a large-scale follow-up programme will be designed to scale up resilience-building with regard to sand and dust storms.

9. The 2019 edition of the *Asia-Pacific Disaster Report*, a joint flagship publication of ESCAP and the Asian and Pacific Centre for the Development of Disaster Information Management, identified distinct hotspots where fragile environments are converging with critical socioeconomic vulnerabilities. The report identified specific pockets within East and North-East Asia, Central and South-West Asia, where sand and dust storms are intensifying owing to land degradation, desertification, climate change and unsustainable land and water use. These hotspots have presented a significant challenge; they are diverse, transboundary and located throughout the region. Following this analytical finding, the intergovernmental Committee on Disaster Risk Reduction, at its sixth session, in August 2019, mandated ESCAP to strengthen regional cooperation through the operationalization of the Asia-Pacific Disaster Resilience Network to reinforce national efforts. The Network is an effort to pool the region’s resources to build institutional capacity in multi-hazard risk assessment and early warning systems to support transformative actions in risk-informed sustainable development.

10. WMO collaborated closely with other United Nations agencies on combating sand and dust storms through the Coalition and bilateral cooperation. The Sand and Dust Storm Warning Advisory and Assessment System of WMO organized (Hangzhou, China, November 2019) a meeting of the Coalition’s working group on forecasting and early warning. In addition, it participated in the formal launch of the Coalition at the fourteenth session of the Conference of the Parties, on 6 September 2019. It took part in an expert group meeting on combating sand and dust storms and a regional plan of action for information-sharing and capacity development in Asia and the Pacific within the ESCAP Committee on Disaster Risk Reduction (Bangkok, August 2019). It participated in a sand and dust storms toolbox workshop (Bonn, Germany, February 2020) at the headquarters of the United Nations Convention to Combat Desertification, which organized it. WMO co-organized, with the Asian and Pacific Centre for the Development of Disaster Information Management, and hosted an international workshop on sand and dust storm risk assessment in Asia and the Pacific (Geneva, October 2019). WMO and ESCAP signed a memorandum of understanding on cooperation in several key priority areas, including sand and dust storms. WMO, together with the Convention and UNEP, prepared the final version of the Sand and Dust Storms Compendium: Information and guidance on assessing and addressing the risks posed by sand and dust storms (ICCD/COP(14)/17, annex) for

final technical editing, layout and publication; it was presented to the fourteenth session of the Conference of the Parties, on 6 September 2019.

11. The third international workshop on sand and dust storms and aerosols was held back to back with the seventh meeting of the Regional Steering Group for Asia of the Sand and Dust Storm Warning Advisory and Assessment System and the fifth meeting of the System's Global Steering Committee, together with a session of the Coalition, was held in Hangzhou, China, from 11 to 14 November 2019. The main objective of the Steering Committee meeting was to coordinate System activities globally, develop the working plan of the System's Steering Committee, discuss a joint vision for sand and dust storm collaboration within the Coalition, together with other United Nations agencies (the United Nations Convention to Combat Desertification, UNEP, WHO and ESCAP) and interested countries. The main purpose of the meeting of the Regional Steering Group for Asia was to coordinate and strengthen the activities of sand and dust storm monitoring, forecasting and early warning among member countries of the System in the Asia and Pacific regional node.

12. WHO has been collaborating with the United Nations Convention to Combat Desertification on the Sand and Dust Storms Compendium: Information and guidance on assessing and addressing the risks posed by sand and dust storms, including on finalizing a chapter on sand and dust storms and health. WHO has also worked towards the inclusion of a good practices statement on sand and dust storms in its Air Quality Guidelines, currently under revision.

13. UNITAR has been supporting the One United Nations Climate Change Learning Partnership for countries in the Sahel, establishing in 2019 a Learning Partnership-Permanent Inter-State Committee on Drought Control in the Sahel West African Hub dedicated to learning and capacity-building on climate change for countries in the Sahel. This platform has been developed and is currently being coordinated in collaboration with the Agrhymet Regional Centre. Because the Regional Centre is affiliated with the Permanent Inter-State Committee, the platform brings together the 13 member States of the Permanent Inter-State Committee, namely Benin, Burkina Faso, Cabo Verde, Chad, Côte d'Ivoire, the Gambia, Guinea, Guinea-Bissau, Mali, Mauritania, the Niger, Senegal and Togo. Within the framework of the platform, two regional workshops were organized at the regional centre, in Niamey. The workshops were aimed at strengthening the capacities of the Action for Climate Empowerment focal points on previously identified themes through training sessions followed by practical exercises. Thus, the first workshop was focused on capacity-building in climate finance and measurement, reporting and verification. The second workshop provided an opportunity to reflect on the best options for strengthening the platform and addressed various topics, such as the integration of climate change into education systems and training in West Africa, financing mechanisms and the development of national learning strategies on climate change in drylands. The participants benefited from training and practical exercises developed by experts in the various fields, taking into account the specificities of the region. Experience-sharing sessions also strengthened the dynamics of dialogue between the border countries. In parallel to the workshops, the platform and e-learning are also being developed, in particular with an online course on the integration of climate change being developed between the regional centre and UNITAR, with a focus on the particular challenges of the Sahel.

B. Monitoring, prediction and early warning

14. The growing body of science on sand and dust storms plays an essential role in supporting policies for sustainable development. This is amplified by the need to enhance national, regional and international cooperation and partnerships to observe, predict, mitigate and cope with the adverse effects of sand and dust storms. In this

context, pursuant to preambular paragraph 16 and paragraph 6 of the General Assembly resolution [74/226](#), United Nations entities have continued to work and cooperate on monitoring, prediction and early warning with regard to sand and dust storms.

15. FAO published a range of data sets that can provide key inputs for source mapping, observation, monitoring, forecasting and early warning, risk and vulnerability assessment and mapping. This includes drone-mapping technology for enhanced disaster risk reduction and management in the agriculture sectors, as well as the FAO Agricultural Stress Index System to characterize agricultural drought-prone areas on a global scale. Early warning systems are an essential component of preparedness and are of great value in the agriculture sectors. A near real-time warning or alert system for farmers and agricultural communities allows farmers to take preventive actions prior to the storms' occurrence to reduce the negative impacts of sand and dust storms on their production. FAO has developed tools and approaches for the assessment, mapping and monitoring of the types, drivers and status of deforestation, land use and land cover change and land degradation that are directly or indirectly related to the monitoring and prediction of sand and dust storms. Such tools include Collect Earth Online; the System for Earth Observation, Data Access, Processing and Analysis for Land Monitoring; Land Degradation Assessment in Drylands; Global Agro-Ecological Zones; Global Land Cover-SHARE; the FAO statistical database; and the FAO soils portal.

16. A methodology to assess the impact and associated risk of sand and dust storms in Asia and the Pacific as a complex transboundary disaster affecting sustainable development is being developed by the Asian and Pacific Centre for the Development of Disaster Information Management in consultation with WMO, the Japan Meteorological Agency, the China Meteorological Administration, Tohoku University, the Barcelona Supercomputing Centre, UNEP and the United Nations Convention to Combat Desertification. The Asian and Pacific Centre is also developing a guideline for reporting on the impact of sand and dust storms through the Sendai Framework online monitoring tool to support countries in reflecting the impact of sand and dust storms in addition to those of other hazards to monitor progress towards the achievement of the global targets of the Sendai Framework and the 2030 Agenda. FAO is in charge of developing the methodology of indicator C-2 on damage and loss in agriculture of the Sendai Framework. In that context, it is also working on incorporating sand and dust storms as a hazard category into the methodology, thereby ensuring that it is also incorporated into the Sendai Framework and the Sustainable Development Goals monitoring framework.

17. UNEP is developing a report on the impacts of sand and dust storms on ocean health, which will serve as a scientific and environmental assessment for policymakers. The report is supported by the independent Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection, which provides advice to the United Nations system, and the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities. The report is expected to be released in early 2021, in the run-up to the fifth session of the United Nations Environment Assembly, to be held in Nairobi from 22 to 26 February.

18. The World Meteorological Organization, which has been addressing the problem of sand and dust storms, including through observations, assessments and forecasting, since 2004, established the Sand and Dust Storm Warning Advisory and Assessment System. Pursuant to its resolution 19 (Cg-18) on enhancing cooperation for monitoring and forecasting sand and dust storms, approved at the eighteenth World Meteorological Congress, in June 2019, as well as the corresponding General Assembly resolutions, WMO is helping to harmonize and coordinate the efforts of various United Nations bodies in order to strengthen monitoring, prediction and early

warning in combating sand and dust storms. In the first step in this direction, representatives of UNEP, the United Nations Convention to Combat Desertification, WHO and ESCAP are involved in the System's Steering Committee. As leaders of the working group on monitoring, prediction and warning systems of the Coalition, WMO and the System will continue to support countries, particularly their national meteorological and hydrological services and regional centres, in facilitating research, innovation and user access to observational, assessment and forecasting products, as well as to contribute to the enhancement of capacity-building and the implementation of warning systems for sand and dust storms.

19. The Sand and Dust Storm Warning Advisory and Assessment System provides sand and dust storm forecast information for early warning systems in various countries and demonstrates prototype examples of how to design warning and advisory systems for sand and dust storms at the national and regional levels. More than 25 organizations currently provide daily global or regional dust forecasts in various geographic regions, including 9 global and more than 15 regional models. The System, a global federation of partners organized around regional nodes, integrates research and user communities (e.g., health, climate, energy, transport, aeronautical and agricultural users). Three regional nodes are currently coordinated by the System's Steering Committee.⁵ The Northern Africa, Middle East and Europe node of the System has organized training events in Nairobi (October 2019) and Dakar (December 2019). The Pan-American node held a meeting of the Regional Steering Group and the special sand and dust storm session during the American Meteorological Society annual meeting, in Boston, the United States of America (January 2020). The Asian node held a meeting of the Regional Steering Group and a workshop on dust in Hangzhou, China (November 2019) and, jointly with ESCAP and the United Nations Convention to Combat Desertification, contributed to Dust Days during the ESCAP meeting in Bangkok and the fourteenth session of the Conference of the Parties.

20. During the reporting period, several improvements were made to modelling systems of the Sand and Dust Storm Warning Advisory and Assessment System, including establishment of the forecasting capabilities for the high-latitude dust in Iceland, simulation of the high-resolution hotspot experiments, improved source characterization in Central and East Asia and better representation of direct (radiation) and indirect (clouds) dust-atmosphere interactions. The System's Steering Committee established a set of research priorities that have a high potential to improve forecasting capabilities. Several observational techniques were optimized for the observation of mineral dust. A warning advisory system for sand and dust storms in Burkina Faso became operational in October 2018. This new product of the System was designed and generated by the State Meteorological Agency of Spain and the Barcelona Supercomputing Centre, in collaboration with the Burkina Faso National Meteorological Agency, and released by the System's Northern Africa, Middle East and Europe node and regional centre.⁶ The warning levels are computed using the dust surface concentration predicted by the System's multi-model median, which is generated daily from 12 numerical predictions released by various meteorological services and research centres around the world. The warning thresholds are set differently for each administrative region because they are based on the climatology of the prediction product itself, using a percentile-based approach. The system for Burkina Faso was presented at the eighteenth World Meteorological Congress.

⁵ See [https://public.wmo.int/en/our-mandate/focusareas/environment/SDS/warnings#:~:text=Captursandandddust.JPG-,Sand%20and%20Dust%20Storm%20Warning%20Advisory%20and%20Assessment%20System%20\(Forecast,World%20Meteorological%20Congress%20in%202007](https://public.wmo.int/en/our-mandate/focusareas/environment/SDS/warnings#:~:text=Captursandandddust.JPG-,Sand%20and%20Dust%20Storm%20Warning%20Advisory%20and%20Assessment%20System%20(Forecast,World%20Meteorological%20Congress%20in%202007).

⁶ See <http://www.aemet.es/en/idi/SDS-WAS>.

Supported by the Climate Risk and Early Warning Systems project, it is currently being extended to other West African countries.

21. During the reporting period, WMO published the third issue of the WMO Airborne Dust Bulletin (May 2019), which contains the results of the annual assessment of the dust load in the atmosphere and puts it in the context of the multi-year climatology. The fourth issue of the Bulletin (May 2020) is in its final stage of production. The Bulletin contains information on the observational and forecast results of representative severe sand and dust storms throughout the world in 2019. It also covers the main research and service achievements of the Sand and Dust Storm Warning Advisory and Assessment System programme during the previous year.

C. Impact mitigation, vulnerability and resilience

22. From an agricultural perspective, sand and dust storm source and impact mitigation are closely interrelated and linked to vulnerability reduction and resilience-building. Land use planning and integrated landscape management tools and approaches are key to support mitigation and resilience efforts. The FAO compendium of sustainable land management technologies and practices for small agricultural producers, disaster risk reduction and emergency preparedness can help policymakers to inform the strategic selection of high-impact, context-specific practices and interventions to mitigate sand and dust storm risks and impacts.

23. In line with paragraph 15 of General Assembly resolution [74/226](#), a regional joint plan of action for combating the negative impact of sand and dust storms in all dimensions of development in the Asia-Pacific region is being developed to reduce vulnerability and to improve and strengthen the resilience of communities in the region. The Asian and Pacific Centre for the Development of Disaster Information Management, a facilitator of the regional partnership for addressing transboundary hazards, working together with the Coalition, is taking forward the work on the development of the regional plan, which will identify regional and subregional actions at the national level aligned with the cooperation framework of the United Nations in the respective countries in the region. The importance of conducting a sand and dust storm risk assessment, such as the one undertaken by the Asian and Pacific Centre, at the regional level as a foundation for developing a regional plan of action was underscored by experts on the margins of the sixth session of the ESCAP Committee on Disaster Risk Reduction, in August 2019.

D. Source mitigation

24. Pursuant to paragraph 15 of General Assembly resolution [74/226](#), United Nations entities have continued to provide capacity-building and technical assistance for combating sand and dust storms and support the implementation of the national, regional and global action plans of the affected countries, including on mitigation. FAO supports sand and dust storm-affected countries in promoting sustainable land management, land use planning, agroforestry, shelterbelts, afforestation and reforestation programmes and forest and landscape restoration mechanisms, which all contribute to the mitigation of both sand and dust storm sources and impacts. FAO has a large portfolio of tools that could provide essential information to better address the sources and dynamics of sand and dust storms. The portfolio includes tools for, and approaches to, assessing and monitoring land use and land cover changes and land use and resources planning, as well as the scale-up of sustainable land resources management practices that are useful for managing both source and impacted areas in the context of sand and dust storm risk and exposure.

25. In September 2019, FAO announced the Great Green Wall for Cities initiative, which is aimed at supporting nature-based solutions to climate change. The rapid expansion of cities without land use design through the clearing or degradation of forests has highly damaging environmental effects. The problem is particularly severe in drylands, where the effects of climate change are expected to increase the exposure of cities and surrounding areas to severe droughts, sand and dust storms, heatwaves, extreme winds, floods and landslides. The approach builds on the Great Green Wall initiative to combat climate change and desertification and address food insecurity and poverty by creating a great mosaic of green and productive landscapes across the Horn of Africa, North Africa and the Sahel. FAO also recently developed a land resources planning toolbox, a freely accessible online source for stakeholders who are directly or indirectly involved in land use planning. The toolbox contains a comprehensive number of existing tools and approaches that are used to implement land resources planning. The structure and content of the toolbox, and linkages to the sand and dust storm toolbox, were discussed at the sand and dust storm toolbox workshop held in Bonn on 13 and 14 February 2020, at which many United Nations organizations were present and contributed to the discussion. The workshop was convened by the United Nations Convention to Combat Desertification in response to a request from parties thereto at the fourteenth session of the Conference of the Parties.

26. UNDP continued its efforts towards land degradation neutrality by helping countries to adopt sustainable land management policies and practices to minimize and avoid future land degradation and restore degraded and abandoned lands. Sustainable land management and restoration interventions can be used to mitigate and adapt to the adverse effects of sand and dust storms. They can help to control the anthropogenic drivers of sand and dust storms, such as the unsustainable use of agricultural land, deforestation, overgrazing, the depletion of water sources and industrial activities. As a possible co-leader of a Coalition working group on mitigation and adaptation, UNDP plans to support countries in integrating, when feasible, source mitigation practices into their policies and programmes as part of the overarching goal of achieving land degradation neutrality.

III. Conclusions

27. The present report highlights the continuing activities of many United Nations bodies, agencies, funds and programmes and those of other related organizations in pursuing their relevant mandates and responsibilities with regard to combating sand and dust storms, in accordance with their strategic plans. Complementarity among initiatives can be enhanced and coordination further improved to maximize the impact of a collaborative United Nations system response to the growing issue of sand and dust storms. The establishment and operationalization of the United Nations Coalition on Combating Sand and Dust Storms, comprising 15 United Nations entities, will strengthen the United Nations response to an issue that remains a serious challenge to the achievement of the Sustainable Development Goals and associated targets. Adopting a disaster risk management approach through the Coalition will be critical to promote and coordinate the response at the local, regional and global levels, thereby ensuring that unified and coherent action is taken.

28. There are still many uncertainties in the world's understanding of the global dust cycle and its interactions with human society. There remains a very limited observational database, both geographically and chronologically, owing to the paucity of suitable dust observations and the complexity of extracting specific dust signals from remote sensing imagery. Risk and vulnerability assessments of sand and dust storm hazards are in their infancy, as are economic impact assessments, and the details

of how these hazards affect critical areas, such as human health, remain elusive. Investigations into how to best transform sand and dust storm forecasts into useful warnings to individuals and other end user communities, such as the aviation industry, solar energy plant managers, farmers and health professionals, are also in their early stages.

29. Sand and dust storms represent a significant transboundary hazard in numerous parts of the world, underscoring the need for strong partnership and the strengthening of subregional, regional and interregional cooperation. Existing precedents for such partnerships and cooperation mechanisms can provide knowledge, data and best practices to be shared and exchanged. Coordinated action by the United Nations system will assist affected Governments and other stakeholders in facilitating dialogue and collaboration on addressing sand and dust storm issues collectively and in building capacity, raising awareness and enhancing preparedness as part of their efforts towards the achievement of the 2030 Agenda for Sustainable Development.
