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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 [77/171](#) 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/77/216](#)) and covers the period from mid-2022 to mid-2023.

The report highlights activities and initiatives undertaken by United Nations system 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.

Sand and dust storms continue to pose a transboundary hazard to livelihoods and multiple socioeconomic sectors, threatening the achievement of the Sustainable Development Goals and associated targets. During the period under review, the General Assembly proclaimed 12 July the International Day of Combating Sand and Dust Storms, establishing a powerful platform to raise awareness of this global issue.

The United Nations Coalition on Combating Sand and Dust Storms continues its efforts to move from the planning to the implementation stage, a process that would be accelerated with increased financial and human resources. The interregional project of the Food and Agriculture Organization of the United Nations, focusing on sand and dust storms in agriculture, has reached its conclusion. The Economic and Social Commission for Asia and the Pacific has begun work on the Regional Plan of Action on Sand and Dust Storms in Asia and the Pacific. The secretariat of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, has launched its toolbox for sand and dust storms. The World Meteorological Organization has continued the further development, extension and implementation of its Sand and Dust Storm Warning Advisory and Assessment System. The Economic and Social Commission for Western Asia is collaborating with other United Nations bodies on

* [A/78/150](#).



combating sand and dust storms through a series of joint assessment, capacity-building and interregional dialogue activities. The World Health Organization organized a regional consultation in the eastern Mediterranean to help countries to understand and minimize the health impacts of the natural air pollution caused by dust. The United Nations Environment Programme has contributed a resident expert to the Gulf Cooperation Council countries regional node of the Sand and Dust Storm Warning Advisory and Assessment System.

I. Introduction

1. In its resolution [77/171](#) on combating sand and dust storms, the General Assembly requested the Secretary-General to submit to it at its seventy-eighth 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 and prevent 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 fifth report of the Secretary-General on the subject ([A/77/216](#)) and covers the period from mid-2022 to mid-2023.

2. The hazards posed to society by sand and dust storms continue to present a formidable challenge to achieving sustainable development in its three dimensions – economic, social and environmental. These hazards are most prevalent in the world's drylands, although major wind erosion events can transport fine soil particles over great distances so that their impacts occur both in the areas where they originate and in communities sometimes thousands of kilometres from the source areas. The soil material lifted into the air consists primarily of mineral rock fragments with organic matter and a wide range of microorganisms, plus anthropogenic pollutants from the soil or picked up in transit through the atmosphere. Impacts commonly associated with sand and dust storms include interruptions to herding and farming, construction and business activities; the closure of schools; health hazards; the loss of solar power output from photovoltaic systems; and disruption to road, air, rail and sea transport services. Long-term consequences are felt particularly in agriculture, where soil erosion can reduce soil quality, undermining the sustainability of farming and herding, and in the health sector, where atmospheric dust is associated with increased levels of air pollution causing excessive morbidity and mortality.

3. The transboundary nature of sand and dust storms, as well as the hazards associated with them, were illustrated in some notable large-scale events early in 2023. Sand and dust storm disaster risk can also arise in highly specific locations, however, including in countries beyond the global South. This highlights another aspect of the issue: sand and dust storms can happen almost anywhere, given the right conditions of strong winds and bare, dry soils.

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 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 Information Management of ESCAP, the Economic and Social Commission for Western Asia (ESCWA), the World Health Organization (WHO), and the World Meteorological Organization (WMO).

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

A. Cross-cutting developments

5. On 9 June 2023, members of the General Assembly proclaimed 12 July the International Day of Combating Sand and Dust Storms through its resolution [77/294](#). In that resolution, the Assembly stressed the need for global and regional cooperation to manage and mitigate the effects of sand and dust storms. Following that decision by the Assembly, Member States organized a side event on the margins of the 2023 high-level political forum on sustainable development in New York to commemorate the first observance of the International Day of Combating Sand and Dust Storms on 12 July, with the contribution of the United Nations Coalition on Combating Sand and Dust Storms.

6. With regard to governance of the United Nations Coalition on Combating Sand and Dust Storms, the Secretary-General takes note of General Assembly resolution [77/171](#), in which the Assembly invited him to consider designating a relevant agency or entity with adequate capacity to act as a focal point on sand and dust storms in the United Nations system, and notes that this discussion is ongoing. The issue was discussed at a virtual meeting of the Coalition on 2 February 2023.

7. The United Nations Coalition on Combating Sand and Dust Storms¹ continues its efforts to move from the planning to the implementation stage under FAO leadership as the current incumbent of the rotating Chair. The 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, created by several Coalition member organizations, still requires mobilization of the necessary resources. The Coalition is discussing the possibility of broadening the scope of the concept note to include other sectors affected by sand and dust storms, in order to align with the workplan of the Coalition.

8. Representatives from Coalition members joined government officials from Algeria, Iraq, the Islamic Republic of Iran and Kuwait, university academics, research institute staff and the cross-divisional task team on sand and dust storms at FAO for the final workshop of the FAO interregional project, on catalysing investment and action to enhance resilience against sand and dust storms in agriculture, which was held in Abu Dhabi from 3 to 5 October 2022.

9. The project, developed in response to requests from six countries, (Algeria, China, Iran (Islamic Republic of), Iraq, Kuwait and Mongolia), was designed to provide the foundation for a large-scale follow-up programme intended to scale up resilience-building against sand and dust storms in agriculture. Workshop participants took a theory of change approach to create the programme proposal, entitled “Greening landscapes: combating sand and dust storms to enhance sustainable agrifood systems in a changing climate”. The proposal was developed as a Green Climate Fund readiness idea note with the objective of assessing the impact of climate change on sand and dust storms, the costs and co-benefits of mitigating sand and dust storms and practices and strategies to enhance adaptation in agriculture to sand and dust storms.

10. The FAO interregional project on catalysing investment and action to enhance resilience against sand and dust storms in agriculture was completed in December 2022. In addition to the programme document, this interregional project had several other main outputs, the publication of which is under way:

¹ See www.fao.org/land-water/land/sds/sds-coalition/en/.

(a) A guide on high impact, context-specific practices and interventions to reduce sand and dust storm source and impacts on agriculture, entitled “Sand and dust storms: a guide to mitigation, adaptation, policy and risk management measures in agriculture”;

(b) Sand and dust storm risk reduction strategies for agricultural sectors in selected countries (Iran (Islamic Republic of), Iraq and Mongolia);

(c) An assessment of economic losses due to sand and dust storms on crops and livestock.

11. In the Asian and Pacific region, following endorsement of the Regional plan of action on sand and dust storms in Asia and the Pacific ([ESCAP/78/12/Add.1](#)) by ESCAP, the Asian and Pacific Centre for the Development of Disaster Information Management has initiated the facilitation of the first meeting of the coordination group for the implementation of the regional plan.

12. In line with the second operational objective of the regional plan, which is to establish impact-based forecasting and early warning systems, the Asian and Pacific Centre for the Development of Disaster Information Management is piloting sand and dust storm impact-based forecasting methodology, the result of which will be used for the development of an impact-based model for the region. The model would anticipate the impact of sand and dust storms on various sectors, to optimize resource allocation in the response phases of sand and dust storm risk management and prevention.

13. Member States are encouraged to benefit from the *Guideline on Monitoring and Reporting the Impact of Sand and Dust Storms through the Sendai Framework Monitoring* in their efforts to understand the impact of this hazard. The Asian and Pacific Centre for the Development of Disaster Information Management, in collaboration with the United Nations Office for Disaster Risk Reduction, has been following up with several countries to support them in collecting and gathering historical data on the impacts of sand and dust storms, so that it can be reported through the Sendai Framework monitor and used as an evidence base to inform policymaking and decision-making.

B. Monitoring, prediction and early warning

14. In accordance with resolution 19 (Cg-18), entitled “Enhancing cooperation for monitoring and forecasting sand and dust storms” and 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. The regional node for the Gulf Cooperation Council countries, formally recognized early in 2023 and hosted by the National Center for Meteorology of Saudi Arabia, is operating with a contribution from the United Nations Environment Programme through a resident expert. The node is moving towards full operationality, building the associated web portal and setting up a model intercomparison of the region that considers two dust forecasting systems. The parallel initiative in West Asia, co-initiated by the Islamic Republic of Iran and Türkiye, is engaging other countries in Central and South-West Asia to support this new regional node. From 8 to 10 May 2023, the node organized an international workshop on sand and dust storms monitoring and forecasting hosted by the Islamic Republic of Iran Meteorological Organization and the Turkish State Meteorological Service. The WMO Barcelona Dust Regional Center, which hosts the Sand and Dust Storm Warning Advisory and Assessment System regional node for Northern Africa, the Middle East and Europe, now provides an extended list of daily warning advisory

products,² including up to seven West African countries (Burkina Faso, Cabo Verde, Chad, Mali, Mauritania, Niger and Senegal). The Sand and Dust Storm Warning Advisory and Assessment System is also starting to work on the engagement of other dust-prone regions (including Australia and South Africa) not represented currently in the discussions.

15. In April 2023, the revision of the Sand and Dust Storm Warning Advisory and Assessment System science and implementation plan for the period 2021–2025 was finalized, aligning the System’s objectives with the WMO strategic goals. In that document, emphasis is placed on specific action for enhancing the provision of high-quality sand and dust storms information for assessing their impacts and for supporting the implementation of operational forecasting systems. Also emphasized are emerging research topics, such as high-latitude dust.

16. Sand and Dust Storm Warning Advisory and Assessment System partners continue to be very active in capacity-building activities. These include online training workshops on the use of satellite products, organized jointly with the European Organization for the Exploitation of Meteorological Satellites, held in October 2022 and February 2023. A similar meeting was held in person in Casablanca, Morocco, in November 2022. International dust research associations (including the Dust Alliance for North America and the Icelandic Aerosol and Dust Association) and the WMO Barcelona Dust Regional Center have also continued their series of scientific webinars.

17. In the West Asia region, ESCWA is collaborating with ESCAP and WMO on combating sand and dust storms through a series of joint assessment, capacity-building and interregional dialogue activities. A forthcoming science-based assessment of the transboundary implications of sand and dust storms in the Mashreq region draws upon remote sensing analysis carried out by ESCWA using Regional Initiative for the Assessment of the Impact of Climate Change on Water Resources and Socioeconomic Vulnerability in the Arab Region regional climate projections generated for the Mashreq region by the Swedish Meteorological and Hydrological Institute. This includes generating new regional climate projections and analysis for the Mashreq region on Representative Concentration Pathway 4.5 that complement those already completed for Representative Concentration Pathway 8.5 and released by the Institute in June 2021. Historical data on sand and dust storms (meteorological observations and remote sensing data) and other meteorological data (including precipitation, temperature, wind speed, prevailing wind direction and data on drought conditions) are analysed to provide more understanding of the drivers of sand and dust storms and evaluate their potential. The new projections generated, along with the climate analysis, will therefore be made available on the Regional Initiative’s Regional Knowledge Hub, maintained and hosted by ESCWA in partnership with the Arab Center for the Studies on Arid Areas and Dry Lands and FAO. The regional climate projections will assist ESCWA and partners in providing regional climate data and services to Arab States as requested by the Arab Ministerial Water Council and the Arab Permanent Committee for Meteorology under the League of Arab States, and ESCWA intergovernmental mandates.

18. In line with the launch of the global early warning initiative for climate adaptation (“Early Warnings for All”), ESCWA has initiated collaboration plans with the WMO Barcelona Dust Regional Center based at the Barcelona Supercomputing Center for enhancing the technical capacity of experts and stakeholders in the Arab region on early warning systems and related components. ESCAP and WMO are expected to join ESCWA in the collaboration and provide technical advisory services. The hands-on training will benefit meteorological services in both the Mashreq and

² See <https://dust.aemet.es/products/daily-dust-products?tab=forecast§ion=was>.

Maghreb Arab regions, which both suffer from sand and dust storms but with different hydrological and climate dynamics. This work falls within the scope of an ESCWA project on climate resilience through regional cooperation for inclusive sustainable development, supported financially by the Swedish International Development Cooperation Agency and within the mandate of the Arab Climate Outlook Forum.

19. The Arab Climate Outlook Forum convenes under the auspices of the Arab Permanent Committee for Meteorology of the Arab Council Ministers Responsible for Meteorology and Climate of the League of Arab States, with technical support provided by ESCWA and WMO. It aims to build the capacity of meteorological services on forecasting and early warning systems and is informed by the contributions of Arab meteorological services. While progress has been achieved in developing and validating regional tools for climate prediction on the sidelines of Arab Climate Outlook Forum meetings, further capacity-building is needed, hence the importance of the collaboration with the Barcelona Supercomputing Center. Outputs of these joint efforts will include the development of technical training material for meteorological services agents in Arab countries on dust forecasting and monitoring, in addition to hands-on training workshops addressing issues of impact mitigation, vulnerability and resilience and source mitigation, among others.

20. Combating sand and dust storms also requires consensus on common priorities and the formulation of joint response measures, in particular to improve the management of land and water resources that contribute to this transboundary phenomenon. Interregional dialogues will thus be fostered by ESCWA among countries of the Mashreq region and members of the Gulf Cooperation Council. The aim would be to identify and discuss regional priorities in the Mashreq region on the basis of science-based assessments and analysis provided above in view of formulating a set of possible joint solutions to mitigate the transboundary effects of dust and sand in the region. These face-to-face dialogues will involve representatives from different sectors (e.g., environment, water, agriculture and foreign affairs) from the targeted countries and will be organized by ESCWA and ESCAP to foster a common understanding of ways forward in the Mashreq region. This would complement other intergovernmental work that ESCWA is undertaking in the region with the World Bank through the Mashreq Waters Knowledge Series, launched in 2019, as well as activities that ESCWA and ESCAP are coordinating on regional approaches under the United Nations Coalition on Combating Sand and Dust Storms.

C. Impact mitigation, vulnerability and resilience

21. On 12 July 2023, the secretariat of the United Nations Convention to Combat Desertification launched a toolbox³ for sand and dust storms, in collaboration with members of the United Nations Coalition on Combating Sand and Dust Storms and partners, namely, ESCAP, FAO, the United Nations Development Programme, WMO and the World Overview of Conservation Approaches and Technologies. As a web-based platform based on the Sand and Dust Storms Compendium, the toolbox will support policymakers, practitioners and stakeholders in mitigating the adverse effects of sand and dust storms by providing easy access to relevant data, methodologies, approaches, best practices, guidelines and other resources. As an important component of the toolbox, the secretariat is collaborating with the World Overview in analysing the sand and dust storm responsiveness of the technologies and approaches stored in its Global Database on Sustainable Land Management, and in exploring ways to make these available to users. The toolbox will be refined further to ensure synergies with other knowledge tools and increase its efficacy and usefulness.

³ See www.unccd.int/land-and-life/sand-and-dust-storms/toolbox.

22. WHO organized a regional expert consultation from 6 to 8 June 2023 in Amman to harmonize the national ambient air quality standards in the eastern Mediterranean region in line with WHO air quality guidelines. The consultation was organized by the Department of Environment, Climate Change and Health, Universal Health Coverage/Healthier Populations, and the Regional Office for the Eastern Mediterranean. It was attended by 40 air quality and health experts from the ministries of health and environment, research centres and universities of Bahrain, Egypt, Iraq, the Islamic Republic of Iran, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Pakistan, Somalia, Spain, the United Kingdom of Great Britain and Northern Ireland and the United States of America, as well as the State of Palestine.

D. Source mitigation

23. The secretariat of the United Nations Convention to Combat Desertification has been assisting in the development of national and regional plans and strategies 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. As a result, countries in Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) have developed a regional strategy for sand and dust storm management⁴ and identified three key priority areas in the region: (a) strengthening knowledge of sand and dust storms; (b) mitigating the impact of anthropogenic sources of sand and dust storms; and (c) ensuring regional cooperation and joint action. Likewise, countries in North-East Asia (China, Mongolia, the Republic of Korea and the Russian Federation) are in the process of formulating a regional strategy for combating sand and dust storms on the basis of source mapping and risk/vulnerability assessments. Nigeria is finalizing a national action plan on sand and dust storms in partnership with relevant institutions and stakeholders.

24. At the fifteenth session of the Conference of the Parties to the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, in May 2022, parties requested the secretariat, within the scope and mandate of the Convention and subject to the availability of resources, to develop a voluntary policy guideline, in consultation with countries affected by sand and dust storms, to assist in the integration of sand and dust storms management into key policy areas. In response, the secretariat of the United Nations Convention to Combat Desertification has been developing, in collaboration with FAO, a voluntary policy guideline building upon the Sand and Dust Storms Compendium and the sand and dust storms toolbox. The aim is to provide affected countries with further information and guidance to create an enabling environment and apply sustainable land management practices in a coordinated fashion, to mitigate the impacts on society caused by sand and dust storms.

III. Conclusions

25. Sand and dust storms are an increasingly important transboundary issue, with numerous impacts on the environment, food security, human societies and economies. Higher sand and dust storm emissions are consistent with climate change projections indicating the expansion of global drylands, increased aridity and worsening drought conditions. The growing need for global and regional cooperation to manage and mitigate the effects of sand and dust storms, and the transboundary hazards they represent, has led to the proclamation of the General Assembly that 12 July serve as the International Day of Combating Sand and Dust Storms. This announcement is a

⁴ See www.unccd.int/land-and-life/sand-dust-storm/overview.

significant step towards enhancing awareness of sand and dust storms and the mobilization of the political will and resources needed to address these issues. This is critically important because sand and dust storms present a serious challenge to the achievement of the Sustainable Development Goals and associated targets.

26. The collaborative United Nations system response to the challenges posed by sand and dust storms continues to progress under the United Nations Coalition on Combating Sand and Dust Storms. The efforts of the Coalition to move forward with its strategy and overall action plan requires the mobilization of necessary resources. In many parts of the world, sand and dust storms represent a key transboundary and multifaceted hazard, which highlights the need to strengthen subregional, regional and interregional cooperation on this issue. For this reason, the United Nations system can add considerable value by helping to coordinate action for effective disaster risk management. There is also a need to foster knowledge exchange among Governments and other stakeholders on good policies and practices designed to address sand and dust storms. All are encouraged to strengthen existing links, establish new links and promote greater policy coherence and synergies among their policies and programmes to manage sand and dust storm issues successfully.
