



IMPLEMENTATION OF THE REGIONAL PLAN OF ACTION ON SAND AND DUST STORMS IN ASIA AND THE PACIFIC (ESCAP/78/12/ADD.1)

BANGKOK, 24-25 JULY 2023

REPORT OF THE MEETING

In the margins of the eighth session of ESCAP Committee on Disaster Risk Reduction, Asian and Pacific Centre for the Development of Disaster Information Management (APDIM) organized on 24 and 25 July 2023, a meeting bringing together various stakeholders from member States, relevant UN entities, and academia to discuss opportunities for enhanced cooperation towards the implementation of the Regional Plan of Action for Sand and Dust Storms (ESCAP/78/12/Add.1). The meeting concluded with a series of priority actions meant to accelerate the implementation of the regional action plan. This document provides a detailed account of the proceedings of the meetings and of the key agreed actions.

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Implementation of the Regional Plan of Action on Sand and Dust Storms in Asia and the Pacific (ESCAP/78/12/Add1)

Sand and dust storms pose significant environmental, health, and socio-economic risks in Asia and the Pacific region. The increasing frequency and intensity of these storms have severe consequences, including the deterioration of air quality, damage to infrastructure, and adverse health effects on populations.

To address these challenges, build a better understanding on the regional scale, and respond to the request of ESCAP member states, APDIM collaborated closely with partners to create a report on **Sand and Dust Storms Risk Assessment in Asia and the Pacific**¹. This study evaluated the impact of this phenomenon on various socio-economic sectors, including human health, transportation, energy, environment, and urban areas. Building upon the study's findings and extensive consultation with regional and international experts and the region's countries, **the Regional Plan of Action on Sand and Dust Storms in Asia and the Pacific (ESCAP/78/12/Add1)**² was endorsed by the Commission at its seventy-eighth session in 2022.

The meeting, held on 24 and 25 July 2023, to discuss implementation of the Regional Plan of Action was organized into **three substantive sessions** aligning with the **three Long-Term Objectives of the Regional Plan of Action**. ESCAP encouraged the active participation of government officials dealing with sand and dust storms, including those in disaster risk reduction, agriculture, health, environment, transport, clean energy production, and weather forecasting.

The Regional Plan of Action, with the three operational objectives, inclusive of recommended actions at national and regional levels, provides a strategic framework and reference for countries in Asia and the Pacific to consider and undertake policy action to minimize the negative impacts of sand and dust storms around:

- Improve the **understanding of the socioeconomic impact** of sand and dust storms with a view to accurately informing policies and investments to reduce their impact and enhance source mitigation.
- Extend the **monitoring system and improve the early warning system** to include an impact-based focus, to provide timely forecasts of sand and dust storms and enable targeted measures to minimize exposure and reduce risks.
- 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.

As indicated in the Action Plan, “implementation of the plan of action requires a concerted effort among member States in the region and various stakeholders at the national and regional levels. The Asian and Pacific Centre for the Development of Disaster Information Management, in collaboration with relevant United Nations organizations and the United Nations Coalition on Combating Sand and Dust Storms, will provide support to member States with regard to the implementation and regular review of the plan of action.”

¹ <https://apdim.unescap.org/knowledge-hub/sand-and-dust-storms-risk-assessment-asia-and-pacific>

² <https://apdim.unescap.org/knowledge-hub/regional-plan-action-sand-and-dust-storms-asian-and-pacific-region>

Discussions in the meeting were organized around **three Sessions** and focused on addressing the following **Key Questions**:

Session 1: Improving understanding of the socioeconomic impact of sand and dust storms.

Key Question 1: Development of Guidance, Methodologies, and Studies. How can we collaboratively develop guidance, methodologies, and conduct comprehensive studies to effectively analyze the impacts of sand and dust storm events on various sectors?

Key Question 2: Transboundary Studies, Reporting, and Surveillance. How can we enhance transboundary studies, investigate long-term impacts on human health, and establish a systematic surveillance system for monitoring the health impacts of sand and dust storms?

Key Question 3: Socioeconomic Impact Assessment and Reporting. What strategies should be employed to assess the socioeconomic impact of sand and dust storms, ensure effective reporting aligned with international frameworks, and enhance our understanding of the geographical distribution of dust sources?

Session II: Extending monitoring system and improving early warning system to include an impact-based focus.

Key Question 1: Observation Systems and Methodology Enhancement. How can we effectively enhance observation systems and methodologies to monitor sand and dust storms, including increasing the number of observation points and developing standardized methodologies?

Key Question 2: Forecasting, Early Warning Systems, and Collaboration. What measures should be taken to develop impact-based forecasting at the regional/global level and improve the effectiveness of early warning systems for sand and dust storms, while enhancing collaboration and data sharing among stakeholders?

Key Question 3: Integration and Collaboration at National Level. How can we collaboratively develop sector-specific advisory services, strengthen linkages between agencies, and integrate sand and dust storm early warning systems with existing natural hazard response systems at the national level to enhance preparedness and response capabilities?

Session III: Coordinated international, regional and transboundary actions in most at-risk and exposed geographical areas to mitigate the risk of and exposure to sand and dust storms.

Key Question 1: Forecasting and Early Warning Systems for Human Health Impacts. How can we establish a framework for issuing regular and systematic forecasting and early warnings specifically focused on human health impacts caused by sand and dust storms, while ensuring effective dissemination of information to affected populations and prioritizing cities with high exposure to poor air quality?

Key Question 2: Impact of Sand and Dust Storms on Specific Sectors. What research methods and strategies should be employed to study the impact of sand and dust storms on electricity production, cotton production, and glaciers, with a focus on addressing challenges in remote areas and assessing potential secondary disasters?

Report of the meeting: Implementation of the Regional Plan of Action on Sand and Dust Storms in Asia and the Pacific (ESCAP/78/12/Add.1), Bangkok, 24-25 July 2023

Opening Statement and Key Points:

H.E. Mr. Seyed-Reza Nobakhti, Ambassador Extraordinary and Plenipotentiary and Permanent Representative of the Islamic Republic of Iran to ESCAP, expressed gratitude to ESCAP's secretariat, and APDIM in particular, for its role in organizing the meeting and **highlighted the severe challenges posed by sand and dust storms** in combating climate change and achieving sustainable development. He stressed the wide-ranging impacts on health, agriculture, livelihoods, and societies, emphasizing the urgency of implementing the 2030 agenda and sustainable development goals. The Ambassador underscored the need for collaboration beyond regional boundaries, particularly in Western Asia and took the opportunity to outline Iran's efforts to tackle sand and dust storms, including the **international conference convened by the Islamic Republic of Iran in Tehran in September 2023** to address root causes and practical solutions. He urged all stakeholders to unite in coordinated action to mitigate these challenges on a global scale.

Ms. Letizia Rossano, Director of Asia and Pacific Centre for the Development of Disaster Information Management, ESCAP outlined the comprehensive actions taken for regions most exposed to sand and dust storms. Ms Rossano recalled how this initiative was born from a technical discussion held in 2019, was anchored in multiple ESCAP resolutions on sand and dust storm. She noted APDIM's year-and-a-half-long **risk assessment**, launched in August 2021, and widely covered by international media. This **assessment was unique in its scope**, covering the entire region and a variety of sectors, such as agriculture, health, energy, and urban development. The assessment unveiled significant findings, including high air pollution exposure for over 500 million people in India, impacts on solar power production in India, China, and Pakistan, flight path risks, agricultural disruptions in Turkmenistan and Pakistan, and potential long-term consequences for water sources in the Hindu Kush Himalayan Mountain region and the Tibetan Plateau. Furthermore, it highlighted cities in southwestern Asia with the highest sand and dust storm exposure, leading to poor air quality. Ms Rossano recalled that the **Regional Plan of Action was drafted on the basis of the findings of the risk assessment** and that its development included thematic and sub-regional consultations, with the involvement of key organizations like the World Meteorological Organization (WMO), the Food and Agricultural Organization; in addition to multiple consultations and meetings, both in-person and online, with stakeholders from Iran, Bangkok, and various international organizations, such as the World Meteorological Organization (WMO). The plan went through multiple drafts and received feedback from ESCAP member states.

The ensuing **Regional Plan of Action was endorsed by the ESCAP Commission in May 2022**. The regional plan focuses on deepening understanding, impact-based monitoring, early warning, and coordinated risk management, adaptation, and mitigation, with recommendations at national and regional levels. Ms. Rossano emphasized the importance of partnerships and the need for further research and collaboration, expressing optimism about future efforts and the upcoming conference in September.

Session I: Improving Understanding of Socioeconomic Impact of SDS

Col. Ulziibayar Luvsansharav, Director of the Policy Planning Department of The National Emergency Management Agency (NEMA), discussed the escalating social and economic impact of sand and dust storms due to climate change. Mongolia's vulnerability to various natural disasters, including sand and dust storms, has increased significantly, with climate-related events surging nearly tenfold in 2021 compared to 2015. The country's landlocked location and continental climate exacerbate these challenges, worsened by a 2.2-degree Celsius temperature increase, double the global average. **Desertification affects over three-fourths of Mongolia**, half of which is highly vulnerable. Natural disasters have negatively impacted human lives, infrastructure, and the environment, straining human security, food and health security, and human migration. Mongolia launched a **national tree-planting campaign** in 2021, aiming to plant two billion trees by 2040 to combat climate change and desertification. Col. Luvsansharav concluded by emphasizing **the importance of developing prevention guidelines, methodologies**, and processes for mitigating the potential loss and damage caused by sand and dust storms. He called for support from national governments and international organizations to **collaborate on sharing disaster statistics** and conducting research to address these challenges.

Mr. Sangmin Nam, Director, Environment and Development Division, ESCAP, acknowledged the efforts of APDIM and proposed linking the **Air Pollution Action Plan** with similar processes for sand and dust storms. In this connection, Mr. Nam acknowledged the progress made in developing the Regional Plan of Action on Sand and Dust Storms and highlighted the similarities between their process and the technical assessment and consultation among member states on air pollution. He emphasized the importance of the Air Pollution Action Plan, which addresses high levels of air pollution and its impacts on premature deaths in the Asia-Pacific region. He highlighted the **lack of coordination mechanisms for air pollution** and the need for further studies, data, and monitoring technology. ESCAP's Regional Action Programme on Air Pollution includes air quality management and regional cooperation. He further mentioned that the Air Pollution program recognized the importance of accumulating data and monitoring technology for sand and dust storms in relation to air quality management. It proposed activities for developing products and conducting risk studies in sand and dust storm-prone areas. Mr. Sangmin Nam explained that this program did not seek to create a single mechanism but rather served as **a platform for coordinating and supporting existing multilateral and multi-stakeholder mechanisms**. He highlighted the associated program, Pan-Asia Partnership for Geospatial Air Pollution Information, which involved geostationary satellites for air pollution monitoring.

Dr. Nick Middleton, Professor, University of Oxford, discussed the **far-reaching socio-economic impacts of SDS**, including wind erosion, effects on agriculture, communication, transportation, health risks, and water quality. He emphasized **the need for more detailed studies on source areas and economic impacts**, as well as standardized methodologies. He categorized the hazards associated with wind erosion and sand and dust storms into three phases: entrainment (lifting soil particles), transport, and deposition. The entrainment phase mainly impacts the agricultural sector by causing soil loss, exposing roots of crops, and affecting structures like fence posts. In the transport phase, issues with visibility and particulate matter getting into engines pose challenges for agriculture and transportation. Additionally, health problems, diseases, and impacts on water sources and solar power potential are associated with the deposition phase. Dr. Middleton provided examples of sand and dust storms that had transboundary effects and **suggested a focus on transboundary approaches to raise the policy profile of SDS**. He mentioned a significant storm that affected multiple sectors in 14 countries over 12 million square kilometers in the Arabian Peninsula. This event led to school closures, flight delays, and health issues, emphasizing the broad reach of such

storms. He also discussed a storm in China that resulted in fatalities, livestock losses, and infrastructure damage, affecting multiple countries and underlining the transboundary nature of the issue.

The presentation concluded by pointing out the **uneven understanding of the impacts and challenges related to sand and dust storms**. Dr. Middleton highlighted the lack of data, standardized methodologies, and comprehensive economic impact assessments. He noted the importance of addressing the transboundary nature of the issue through international cooperation.

Mr. Rahul Sengupta programme management officer from United Nations Office for Disaster Risk Reduction (UNDRR), presented insights on the Sendai Framework monitoring and underscored the significance of statistics and data in disaster risk reduction. He emphasized the importance of international standards for collecting data on damage and loss caused by disasters. He referred to the **APDIM Guideline on Monitoring and Reporting the Impact of Sand and Dust Storms through the Sendai Framework Monitoring**. In this connection, Mr Sengupta mentioned the need for countries to collect data on the impacts of SDS on people, economies, and society to achieve comprehensive reporting. He emphasized the importance of maintaining consistent data collection criteria and methodologies over time to enable international and intertemporal comparisons. He highlighted the involvement of various government entities in providing authentic data and the issue of data ownership. Additionally, he suggested the inclusion of NGOs to enrich data sources. Mr. Sengupta mentioned that 12 countries have already reported on the impact of sand and dust storms through the Sendai Framework Monitoring. In conclusion, Mr. Sengupta encouraged government partnerships with relevant ministries and organizations for authentic, timely data collection and reporting.

PLENARY DISCUSSION:

Mr. Sangmin Nam initiated the discussion, suggesting a link between sand and dust storms and climate change agendas.

- Mentioned the potential contribution of these storms to climate change, including increased radioactivity on mountains and deserts and rising temperatures.
- Raised questions about whether sand and dust storms could reduce carbon stocks.
- Proposed expanding the discussion to explore the links between these storms and climate change, seeking input from participants like Dr. Nick Middleton and others joining virtually.

Dr. Nick Middleton acknowledged the links between sand and dust storms and climate change.

- Mentioned the effects of climate change on the frequency and intensity of extreme events, like droughts, which can increase vulnerability to wind erosion.
- Pointed out the loss of soil organic carbon from agricultural fields as a contributing factor.
- Emphasized the importance of exploring the interconnections between sand and dust storms and climate change for achieving land degradation neutrality.

Dr. Soma Sen Roy from India Meteorological Department discussed the significance of the climate change discussion for their region.

- Mentioned a decrease in dust storm days due to industrialization but an increase in rainfall, particularly during the monsoon season.
- Suggested the need for further studies to investigate the potential links between dust storms and extreme rainfall episodes.

Mr. Mahdi Rouzegir, Deputy Permanent Representative of the Islamic Republic of Iran to ESCAP, expressed interest in sharing an important issue with colleagues.

- Mentioned Iran's National Committee on Sand and Dust Storms (SDS) and inquired about other countries in the region with similar committees at the national level.
- Emphasized the significance of these committees for effectively addressing SDS issues and suggested collaboration on joint projects.
- Stressed the need for a financial mechanism to support these projects and the importance of addressing the financial aspect of SDS initiatives.
- Mentioned the existence of a coordinating group as detailed in the regional plan of action on sandstorms and expressed gratitude for colleagues' attention to this matter.

Ms. Letizia Rossano added to the discussion by highlighting the importance of common guidance and methodologies for analyzing these events and their transboundary impacts.

- Proposed organizing a more technical follow-up meeting among interested countries to examine the impact of dust storms on climate change and related phenomena.
- Encouraged feedback and guidance from Member States on this issue.
- The discussion underscored the need for further research and cooperation to better understand the connections between sand and dust storms and climate change and their impacts on various regions.
- It also emphasized the importance of a collaborative approach in developing common guidance and methodologies for addressing these issues.

Session I Wrap UP:

Ms. Letizia Rossano concluded the discussion by highlighting the key points raised in the presentations and discussions aligned well with operational objective one of the Regional Plan of Action (ESCAP/78/12/Add.1). These included the **need for common guidance to conduct impact-based analysis** and the importance of conducting **impact-based transboundary studies of single transboundary sand and dust storm (SDS) events**. She expressed great interest in identifying such transboundary events that could bring affected countries together to conduct in-depth impact analyses. She further noted the discussion on the need to conduct **specialized studies** to delve deeper into specific aspects of SDS impact, such as its **effects on soil health, biodiversity, and local economies** as well as the suggestion to bring closer the air pollution, climate change and sand and dust storm agendas.

Ms. Letizia Rossano emphasized that ESCAP is ready to support this work from a technical perspective and offered to provide suggestions for possible events and countries to collaborate on. She encouraged participants, both in the room and online, to share any questions or comments on this matter. She also highlighted the importance of establishing national committees or organizations to address sand and dust storms in a way that would cut across institutional gov

Session 2: Extending Monitoring and Early Warning Systems

Mr. Ben Churchill, Head of the Regional Office for Asia and the South-West Pacific, emphasized the transboundary nature of SDS and stressed the significance of data and information sharing for scientific studies. He emphasized the importance of sharing a range of data, not limited to observational data. He stressed the inclusion of **crucial data** types such as **air quality metrics, network information, and socio-economic data**. Furthermore, he highlighted that when this data is integrated, it becomes a valuable resource for regional systems and, on a broader scale, contributes to the global system. Mr. Churchill also noted that its utility extends beyond operational considerations, as it plays a pivotal role in advancing scientific research. He highlighted that this synergy aids in enhancing our comprehension of associated risks and phenomena and mentioned that it strengthens the foundation for early warning systems for sand and dust storms. At the regional level, Mr. Churchill explained that their approach involves working closely with their member organizations, WMO maintains a robust planning and implementation system. Mr. Churchill further noted that given the current trajectory of climate change, it was evident that **sand and dust storms would increasingly become a more prominent and serious issue in the future**. He also expressed appreciation for the commendable efforts of the Chinese Meteorological Agency (CMA) and the Barcelona team in contributing to the Sand and Dust Storm Warning and Advisory Service. He also noted that it was heartening to see that the Gulf Cooperation Council was considering joining as a node, and Iran and Turkey were collaborating to potentially make this operational. These developments were seen as very positive and expected to help address some of the existing gaps.

Finally, Mr. Churchill highlighted that **WMO was wholeheartedly supportive** and actively engaged in the implementation of the ESCAP regional plan of action.

Dr. Saviz Sehat, Research Institute of Meteorology and Atmospheric Science (RIMAS), Government of the Islamic Republic of Iran, expressed gratitude for the collective support and contributions from multiple organizations and individuals who are contributing to furthering implementation of this important agenda. Dr. Sehat highlighted **three pivotal concepts** developed in partnership with Iraq, the Iran Meteorological Organization, and other stakeholders through the joint expert team for observation and services. These concepts focused on: The **implementation of an integrated SDS early warning system; Cataloging hazardous events; Promoting impact-based multi-hazard forecasts and early warning systems**. Notably, she emphasized the voluntary nature of these projects, conducted without financial support, and urged collaboration and assistance from other UN entities. Dr. Sehat further acknowledged the valuable contributions of various colleagues, including those from India, the WMO- SDS WAS (Sand and Dust Storm Warning Advisory and Assessment System) team, and Iranian colleagues. She also expressed gratitude to APDIM for the significant support received.

Dr. Sehat discussed workshops and training courses conducted in the region to address challenges in forecasting SDS events, emphasizing the difficulty of modeling micro to mesoscale dust storms and the need for improved equipment and laboratories in the region. She touched upon the **role of anthropogenic interference**, highlighting projects that addressed this issue and the collaboration between Iran and Turkey to cohost WMO's West Regional Node.

Dr. Sehat showcased the significance of considering soil texture and properties in models, illustrating that the Research Institute of Meteorology and Atmospheric Science had done this. She discussed the **mapping of dust source identifications and quantification of dust flux for over 23 countries in the region**. Dr. Sehat also mentioned the development of risk maps and transportation risk analysis. She concluded by introducing the RIMAS SDS warning system application, which includes air pollution forecasts, terminal velocities, and ultraviolet index forecasts.

Throughout her presentation, Dr. Sehat emphasized the importance of regional collaboration and the need for further support to address the complex challenges of SDS in the West Asia region.

Presentation III delivered by Mr. Saman Ghafari, on behalf of Dr. Tahmasebi, from the Sand and Dust Storm National Committee, Government of the Islamic Republic of Iran, provided an overview of the upcoming **International Conference on Sand and Dust Storms scheduled to be held in Tehran in September 2023**. He emphasized that this conference would serve as a platform for in-depth scientific discussions and constructive dialogues focused on sand and dust storm mitigation.

He highlighted that the conference would address the unique needs of areas within the Middle Asia and West Asia regions, with particular significance on efforts encompassing countries within the Persian Gulf region. These bilateral and multilateral negotiations with neighboring countries aimed to understand their unique concerns and tailor strategies accordingly. Mr. Ghafari stressed the **importance of international cooperation in dealing with sand and dust storm mitigation**, advocating for a global partnership to collectively address this pressing environmental issue through knowledge sharing, expertise, and resource collaboration. In conclusion, he expressed sincere appreciation to all partners and participants for their support, highlighting the significance of collective commitment to preserve the planet and ensure environmental stewardship for future generations.

PLENARY DISCUSSION:

Mr. Sanny Ramos Jegillos (UNDP Asia Pacific Regional Office):

- UNDP interested in collaborating with ESCAP and other UN agencies.
- Focus on understanding sand and dust storms' origins, biophysical impacts, and resulting loss and damage.
- Collaborating with WHO and UNDRR to enhance or develop new databases for monitoring loss and damage.
- Emphasis on refining hazard classification.
- Leading UNDP's efforts in this domain.
- Focusing on the health implications of sand and dust storms and the need for a better understanding of the pathogens and pathways affecting public health.
- Goal is to identify mechanisms at play.
- Interest in cooperation and collaboration with UNFCCC.

Mr. Ben Churchill (WMO, Regional Officer based in Singapore):

- Acknowledgment of the unique specifications of the Asian region within WMO.
- Hope for further development and expansion of cooperation to involve more stakeholders in meteorology and climate services.
- Emphasis on involving more partners.
- Need to work towards WMO recognition as a regional center for scientific purposes and research, requiring consensus.

- Discussion on different organizations' varying definitions of regions and the importance of joint discussions to understand who benefits.
- Encouragement of data sharing and expertise utilization within the region.
- Bringing the action plan back within the WMO regional association framework.
- Anticipation of further discussions and support regarding warning and advisory terminology distinctions.

SESSION II WRAP UP:

In summarizing key points of the discussions, Ms. Letizia Rossano emphasized the **multi-sectoral approach** that the regional plan of action for risk assessment had adopted, recognizing the value of incorporating diverse perspectives. Furthermore, Ms. Rossano emphasized the importance to maintain a collaborative efforts, reaching out to **government seats and stakeholders across various sectors**, including disaster risk, production, agriculture, health, environment, transport, clean energy, and weather forecasting. She underlined the significance of the World Meteorological Organization's (WMO) regional work, commending WMO's leadership in promoting understanding and collaboration.

She acknowledged the timing challenges with regard to the WMO's involvement, expressing gratitude for their contributions. While recognizing the need for regional support, she advocated for a simpler approach, emphasizing that **sand and dust storms transcend regional boundaries, as evidenced by the Middle Eastern and Southwest Asia common concerns**. She expressed APDIM's readiness to explore this aspect further, underscoring her commitment to fostering cooperation and coordination.

Session 3: Coordinated International, Regional, and Transboundary Actions

Ms. Mehrnoush Omati and Mr. Moradian from the National Cartographic Centre of the Islamic Republic of Iran provided insights into SDS risks in Iran, shedding light on the geographical areas most at risk and exposed to SDS, discussing sand and dust storm management in Iran, highlighting its global significance and impact on various Earth system components, including geomorphological evolution, biogeochemical cycles, climate, environment, and desertification. Ms. Omati in addition to offering general introductory points about the phenomenon of sand and dust storms, highlighted the **need for a comprehensive observation system and methodology**, which includes satellite technology, ground-based observation, and remote sensing. These methods help monitor dust storm formation, development, and spread. She also pointed out the **importance of data sharing** and collaboration among stakeholders for better forecasting and management. A data-sharing platform can facilitate the sharing of real-time data and forecast information. Ms. Omati discussed the spatial and temporal distribution of dust in Iran, emphasizing the importance of monitoring and reducing the risks associated with dust storms. She concluded by outlining objectives and guiding principles for sand and dust storm contingency planning, including sustainable land conservation, agriculture, integrated disaster risk management, and community preparedness. She stressed the importance of stakeholder participation, clear responsibilities, and enhanced connectivity in implementing these strategies.

Ms. Carol Chouchani Cherfane, Director, and Mr. Hassan Awad, ESCWA Ms. Carol Chouchani Cherfane expressed her pleasure at being a part of the meeting convened by ESCAP, a sister regional Commission. She identified her organization as ESCWA, the regional Commission that serves Western Asia, encompassing the entire Arab region from Morocco to Oman. She mentioned that they have been collaborating closely with APDIM for several years.

Ms. Chouchani Cherfane, who directs the Arab Center for Climate Change Policies, elaborated on their focus, which involves climate change assessment using regional climate modeling, risk assessment, remote sensing, and tools for impact and vulnerability assessment. She noted that their work concerning sand and dust storms is included within this scope. It encompasses more than just assessment; they also provide **support for adaptation, technology training, negotiations, and facilitating access to climate finance**. She mentioned that they are pleased to co-convene the UN Sand and Dust Storm Coalition Working Group on Regional Cooperation alongside APDIM. Through this collaboration, they aim to advance a science-based approach to address sand and dust storm challenges.

In describing ESCWA's work in this field, Ms Chouchani emphasized the **importance of mapping to understand the phenomenon**, identifying its contributors, and analyzing its historical patterns. She emphasized that they continue to work on observing and documenting the frequency of these events, intending to forecast their expected intensity and frequency for future planning. This, she pointed out, is not limited to the national level but extends to the interregional level, especially in collaboration with colleagues in the Greater Middle East, which falls within their region's purview. Their collaboration also encompasses partner and neighboring countries through **interregional cooperation with ESCAP**.

She expressed her intention to share some of the work they have undertaken to contribute to the ongoing dialogue with a view to inform the discussions related to the Regional Action Plan for Sand and Dust Storms in Asia and the Pacific, complementing their efforts in their own region. She then introduced Mr. Hassan Awad, a skilled researcher in the team, who provided insights into the mapping work conducted in the Middle East and introduce a dashboard currently under development.

Mr. Hassan Awad presented ESCWA's recent work on sand and dust storm mapping in the Arab region. He acknowledged the natural occurrence of sand and dust storms and its challenges in the region due to vast deserts and unique landscapes. Mr. Awad referenced the overview of sand and dust storm impacts provided in the previous meeting and shared that ESCWA is implementing a project to address environmental challenges by adopting coordinated methodology. Mr. Awad described the approach, which involves reviewing historical sand and dust storm events using data from various sources, including meteorological observations and remote sensing technology. The aim is **to develop an integrated framework for sand and dust storm detection while determining the climatic and environmental factors** strongly correlated with historical storms. He emphasized the critical role of NASA's Moderate Resolution Imaging Spectroradiometer (MODIS) data in their analysis. Several **dust detection indices** were evaluated, with the Global Dust Detection Index consistently providing the most accurate results for their analysis. Mr. Awad detailed the steps involved in the index, including masking surfaces and atmospheric features to eliminate noise and distinguish dust particles from desert areas.

Mr. Awad further discussed the selection of sand and dust storms for analysis, relying on specific criteria and cross-referencing their findings with true-color images from MODIS data and news reports. He shared **mapping results for selected sand and dust storm events**, showing the extent and source of the storms. He provided examples of storms in 2022, 2021, and 2019, demonstrating the **mapping process and its value for understanding the phenomenon and assessing its socio-economic impacts**.

Mr. Awad explained that the mapping results, true-color images, and historical observation data would be accessible to stakeholders through a centralized platform, referred to as a dashboard. This platform would offer users the ability to explore and validate the results, gaining insights into the sand and dust storm phenomenon.

Ms. Neda Moshref Javadi, Programme Officer, the Economic Cooperation Organization (ECO) delivered a presentation on disaster risk management in the ECO region, emphasizing the organization's priorities and components within the ECO Regional Vision 2025. ECO, an international governmental regional organization founded in 1965, with its founding members being Iran, Pakistan, and Turkey, covers a vast territory with 500 million inhabitants, is highly disaster-prone, experiencing a wide range of hazards, including floods, earthquakes, landslides, and sand and dust storms. The COVID-19 pandemic has also taken a significant toll on the region, causing more than 300,000 cases and economic losses exceeding two billion US dollars.

Ms. Moshref Javadi provided specific examples of disasters, such as hazardous dust storms in Southern Iran, which pose a significant health risk to the population. In Pakistan, a flood in 2010 caused damages totaling around \$50 billion and economic losses of approximately \$15 billion. Turkey, on the other hand, experienced a devastating earthquake, resulting in more than 50,000 fatalities and around 7,000 refugees.

She then discussed ECO's vision for 2025, focusing on disaster reduction. The vision aims to establish a **network for disaster reduction and develop a regional action plan for cascading risk**. Ms. Moshref Javadi elaborated on ECO's priorities and components, including risk assessment, integrated hazard monitoring, enhanced data policy, and government capacity improvement. ECO has set out a roadmap for the three phases: determining hazards and mapping risk, adapting informed development areas, and enhancing disaster risk governance.

In conclusion, Ms. Moshref Javadi underscored the **importance of intergovernmental institutions like ECO** in addressing disaster risk reduction and dust and sandstorms. ECO is committed to contributing to the realization of regional objectives and the disaster reduction framework. Ms. Neda Moshref Javadi

expressed ECO's readiness to collaborate with ESCAP, APDIM, and other relevant bodies for mutual progress.

SESSION III WRAP UP:

Ms. Letizia Rossano noted in wrapping up the session, noted how the presentations highlighted the substantial technical capabilities present in the region. The discussion focused on the need to expand our focus beyond our respective technical working regions. In order to do so, Session 3 deliberations, pointed to the crucial importance, as also emphasized in Session 1 and 2, to **identify one or two major transboundary events** to allow for more in-depth analysis of the trans-boundary implications, including their impact, socio-economic consequences, and origins. The goal is to facilitate information exchange and foster collaboration among the countries involved. This will enable officials from these nations to become acquainted with one another, work together, and develop shared methodologies.

The significance of this approach lies in establishing a comprehensive understanding of how these events are documented and interpreted at the national level.

It will also create a shared foundation that will prove indispensable for future activities. These include drawing lessons for impact-based forecasting, formulating mitigation strategies, and shaping policy decisions. The practicality and informativeness of this approach cannot be overstated, and it holds the promise of effectively addressing the challenges posed by sand and dust storms.

Special Session on the impact of Sand and Dust Storms in Urban Areas

Mr. Amin Shamseddini, Program Officer in APDIM, delivered a presentation on the airborne exposure of urban areas to sand and dust storms. He emphasized the significance of this topic due to the substantial population and infrastructure located in urban areas. He noted that Asia and the Pacific cities in Southwestern Asia face the highest exposure to sand and dust storms. He highlighted that approximately 60 million people in these areas experienced over 100 dusty days in 2019. He then elaborated on the data from the APDIM Sand and Dust Storms Risk Assessment in Asia and the Pacific, which showed cities in Iran, Central Asia, Afghanistan, Pakistan, India, and the northern part of China as highly exposed to sand and dust storms. He concluded his presentation by touching on the presence of extensive energy infrastructure and the urban environment in the context of sand and dust storms, highlighting the importance of understanding and addressing the risks associated with these events.

Ms. Sunisa Soodrak, associate programme management officer, UNDRR, introduced the Making Cities Resilient (MCR) Campaign by describing the goals of the initiative, explaining that it seeks to help cities improve coordination, networking, and knowledge sharing with other cities and partners. This collaborative approach involves sharing successful experiences and lessons learned among cities worldwide. Ms. Soodark discussed the three key aspects of the initiative: raising awareness, helping cities plan better, and assisting with city implementation. She elaborated on the 10 essential components that serve as the foundation for the assessment tools used to evaluate the level of resilience in different cities.

She emphasized the importance of strengthening partnerships, connecting with national governments, and encouraging multi-stakeholder collaboration within cities. She also discussed the value of city-to-city exchange as a way to share experiences and connect with others. Ms. Soodark concluded her remarks by highlighting the extensive reach of the initiative, with over 1,572 cities participating worldwide, a third of

which are in the Asia-Pacific region. She welcomed questions and further discussions about the Making Cities Resilient initiative.

Ms. Orgiltsogetsloh, Specialist in charge of disaster protection, the City Mayor's Office, Ulanbataar, highlighted the environmental challenges in Mongolia. While the capital city faces fewer sandstorm impacts, provincial areas, like the Gobi Desert and Southeastern Mongolia, are significantly affected. Herder families, reliant on livestock for income, are most vulnerable to these extreme weather events. Ms **Orgiltsogetsloh** further underscored the challenges related to the safeguarding of infrastructure at urban level.

Concluding Remarks

Ms. Letizia Rossano, Director of APDIM

In the concluding remarks for the two-day meeting, Ms Rossano recalled the meeting's primary purpose of unpacking the key elements of the Regional Plan of Action on Sand and Dust Storms (ESCAP/78/12/Add1.) including by identifying priority actions, and collectively deciding the way forward, with a specific focus on supporting countries in the region towards enhanced collaboration. She noted that APDIM will produce a note of the meeting, containing suggestions for the future course, which will be shared with all Member States, thus facilitating the formation of smaller technical groups or working groups for collaboration on various aspects.

Ms. Rossano proceeded to address key points from the first day's sessions, emphasizing the recurring theme surrounding the **need for consistent methodologies** in assessing risk from sand and dust storms, monitoring and issuing early warning as well as accounting for their **damage and losses** once they occur. She stressed the importance of **integrating sand and dust impact into the Sendai Framework Monitor** to enable greater collaboration within and across government entities when addressing these challenges. Notably, she highlighted the positive development that 12 countries have already reported sand and dust impacts through the Sendai Framework Monitor, expressing hope that APDIM guidelines had proven beneficial to this end. Additionally, she underscored the significance of **data sharing and maintaining consistency in data analysis**, particularly concerning impact-based forecasting methodologies.

Furthermore, Ms. Rossano emphasized the need, highlighted across the two-day deliberations, of **identifying specific key events at regional and sub-regional levels to generate deeper collaboration among Member States affected by these occurrences**, thus fostering exchanges and technical cooperation.

Ms Rossano also recalled **APDIM's Support towards the implementation of the Regional Plan of Action, including follow-up to this meeting** and noted that upon request from individual member states, APDIM stands provide support to governments in implementing the discussed actions, including technical assistance, capacity-building and facilitation of bilateral and multilateral discussions on trans-boundary issues related to sand and dust storms risk assessment, data sharing, SDS monitoring etc.

In the summarizing the **special session focused on cities**, Ms Rossano expressed appreciation for the collaboration with UNDRR and their opening to **establish a platform for cities affected by sand and dust storms** to share their experiences and knowledge. She looked forward to further developing this collaboration. Ms. Letizia Rossano extended her sincere thanks to all participants, in person and online, who joined the meeting.