Sand and Dust Storms at Regional Scale: Opportunities for Partnership and Cooperation

Asian Conference on Disaster Reduction 2019
25–27 November 2019
Ankara, Republic of Turkey

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1. About APDIM
ESCAP's regional institutions:

- **APCICT**: Asian and Pacific Training Centre for Information and Communication Technology for Development (Incheon City, Korea)
- **APCTT**: Asian and Pacific Centre for Transfer of Technology (New Delhi, India)
- **APDIM**: Asian and Pacific Centre for the Development of Disaster Information Management (Tehran, Islamic Republic of Iran)
- **SIAP**: Statistical Institute for Asia and the Pacific (Makuhari, Chiba Prefecture, Japan)
- **CSAM**: Centre for Sustainable Agricultural Mechanization (Beijing, China)
Goal and objective of APDIM

1. Reducing human casualties, economic damage and negative consequences of natural hazards through strengthening disaster information management in Asia and the Pacific.
2. Strengthening the capacity of countries in the region and regional organization to manage disaster information and disaster risk reduction.
3. Assisting the strengthening of regional cooperation and coordination between countries and regional organizations in disaster information management with the aim of achieving the socio-economic development of nations and achieving internationally agreed development goals, in particular those related to Sendai framework for disaster risk reduction 2015-2030 and the SDGs.

Strategic focus:
Regional and South-South cooperation for addressing shared vulnerabilities arising from cross-border disasters through innovation

Service lines
Repository of information, data and knowledge repository
Training, knowledge and experience sharing
Information services on innovations for cross-border disasters
Three pillars conveying APDIM’s thematic priorities

Information and knowledge repository
- Regional repository of databases, information and knowledge
- Regional hub of new tools, techniques and standards for information management

Capacity development
- Regional capacity development hub for exchange of expertise, experiences and knowledge
- Demand driven and customized training services to address information and knowledge gaps

Regional information services for cross-border disasters
- Specialized services (geospatial & statistical) for cross-border disasters
- Regional information (maps & databases) for cross-border disasters
Establishing regional cloud-based metadata platform

- Asia-Pacific Disaster Risk Atlas

- Operationalize the Atlas as regional online repository of multi-hazard risk information related to cross-border disasters
Application of APDIM Disaster Risk Atlas for SDS risk and damage assessment

**Short-term forecast vs Long-term projection**

1. Impact-based SDS risk forecast: By integrating layers of vulnerability and exposure information into short-term SDS forecast.


3. APDIM’s mandate on the early warning network and close cooperation with WMO (ESCAP MOU with WMO). The work underway on impact-based forecasting
Capacity development pillar

Capacity development programme focusing on Sendai Framework monitoring and disaster loss databases

- National training on Sendai Framework Monitoring in the Islamic Republic of Iran as initial pilot country in 2019.

- Capacity development on retrofitting of disaster loss databases in the Islamic Republic of Iran with NDMO and UNCT, in partnership with UNDP/GCDS

- Regional training programmes on disaster information management in multi-hazard risks in partnership with regional and national centres of excellence
Regional slow-onset hazards network and alert system (with a focus on sand and dust storm)

- High-level Expert Consultation on “Regional Cooperation for Combating Sand and Dust Storms in Asia and the Pacific” January 2018
- Analytical report on “Sand and Dust Storms in Asia and the Pacific: Opportunities for Regional Cooperation and Action” May 2018
- AMCDRR 2018 side event on “Building resilience to slow-onset disasters: implications for regional cooperation” July 2018
- Expert Consultation on “Regional Cooperation for Building Resilience to Slow-Onset Disasters, including Sand and Dust Storms” November 2018
2. Critical gaps in reducing risk and negative impacts of sand and dust storm

2.1. Understanding the sources, assessing the risk and forecasting the impacts of sand and dust storms
Transportation infrastructures exposure to EQ and Landslide

Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.
Many hydropower stations would experience water scarcity by 2030.
SDS Impact Forecasting: methodological Framework

Dust forecast data *NMMB/BSC-Dust* – Barcelona Supercomputing Center.

Human development index (Subnational) – UNDP

Overlaying

Gridded population data - Worldpop

Sub-regional Impact Forecasting of SDS Event 28 May 2018

Central and South Asia
Results Key messages

1. **324 million people** are in the range of SDS impacts
2. **4.704 billion dollars** of economic stocks are exposed.
3. **127 million people** are in the Low and Medium Human Development Index area

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The population ratio based on the level of Human Development Index (HDI) in the forecasted sand and dust storm area

<table>
<thead>
<tr>
<th>Category</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>People in Low HDI</td>
<td>9%</td>
</tr>
<tr>
<td>People in Medium HDI</td>
<td>31%</td>
</tr>
<tr>
<td>People in High HDI</td>
<td>38%</td>
</tr>
<tr>
<td>People in Veryhigh HDI</td>
<td>20%</td>
</tr>
<tr>
<td>People in No HDI data</td>
<td>2%</td>
</tr>
</tbody>
</table>

TOTAL
Key areas for effective SDS Risk Assessment:

i. Land use issues (land degradation, desertification, and water resource management);

ii. Climate and weather-related issues,

iii. Socio-economic vulnerability/exposure.

iv. Risk modelling
Key questions to be addressed

What are the objectives and use of regional SDS hazard and risk assessments?

What risk assessment methodology would be most useful in developing an overview of the SDS risk in the region up to 2030?

What data and indicators would be needed?

What kind of data is currently available for SDS risk assessment and which organizations collect that data?

What kind of data is needed for SDS risk assessment that is not currently being collected? (data gap)

What is the way forward?
2. Critical gaps in reducing risk and negative impacts of sand and dust storm

2.2 Policy for sand and dust storm risk management
Science, Policy, Action Nexus
Sand and dust storm

Science
Assessment of sand and dust storms
Research, measure and assess
Innovation and knowledge network
Monitoring and early warning system

Policy
Regional cooperation framework
Country-level action network
Dust storm fund and facility

Action
Country action plans
Investment projects
Capacity building
Socioeconomic vulnerability layer (transportation, energy, ICT, economic stock, population, etc)

Impact-based SDS risk forecast

Hazard

Vulnerability/Exposure

Long-term loss projection (Average Annual Loss)

Policy, Planning and Interventions

Operational decisions
Weather forecast (1-10 days)

Tactical decisions
Monthly forecast (1-2 months)

Strategic decisions
Seasonal forecast (3-6 months)

Long term decisions
Climate scenarios (years/decades)
THE DISASTER RISKSCAPE ACROSS ASIA-PACIFIC
PATHWAYS FOR RESILIENCY, INCLUSION AND EMPOWERMENT
Asia-Pacific Disaster Report 2019
Key messages of Asia-Pacific Disaster Report 2019

1. Economic losses are on the rise
2. Disaster risks accumulate and cluster in four hotspots (Environmental fragility, poverty and disaster risk converging in four risk hotspots)
3. Disasters widen inequalities in incomes and opportunities
4. Invest in resilience to outpace risk
5. Empower the poor through big data and new technologies
2. Critical gaps in reducing risk and negative impacts of sand and dust storm

2.3. Regional and sub-regional cooperation
The Asia-Pacific Disaster Resilience Network: A part of Regional Road Map for implementation of 2030 Agenda for Sustainable Development. Progress is reported to Asia-Pacific Forum for Sustainable Development linked with HLPF.

Regional platform for multi-hazard early warning systems

Hazard cluster approach to partnership networks

- Extreme weather events
  - Tropical cyclones in partnership with WMO

- Geophysical hazards
  - Tsunamis and earthquakes
    - Intergovernmental Oceanographic Commission

- Slow-onset hazards
  - El Niño, droughts, sand and dust storms
  - Regional Integrated Multi-hazard Early Warning System for Africa and Asia, WMO, Convention to Combat Desertification, UNEP

Disaster Information Management
Asian and Pacific Centre for the Development of Disaster Information Management

Sixth Session of the Committee on Disaster Risk Reduction (CDRR 6)
Scaling up the mandates for enhancing regional Cooperation, facilitating the Impact-based forecasting

ESCAP Resolution 72/7 (2016) Regional cooperation to combat Sand and Dust Storms in Asia and the Pacific

• To accord priority to SDS work as transboundary challenges
• To Work, including through APDIM, to promote regional/inter-regional networking.

ESCAP Resolution 73/7 (2017) Enhancing regional cooperation for the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in Asia and the Pacific

Support and facilitate multi-hazard early warning systems, impact-based forecasting and disaster risk assessment to strengthen regional cooperation mechanism.

Tehran Ministerial Declaration on Combating SDS (5 July 2017) recognized the role of APDIM in developing human and institutional capacities in disaster information management.
APDIM’s contribution to the SDS Agenda in the region

• Expert consultation meeting on regional cooperation for building resilience to slow-onset disasters including sand and dust storms, Tehran, 5-6 November 2018 (Regional & international partnership and networking)

• Expert Group Meeting to Combat Sand and Dust Storms: Towards a Regional Plan of Action for Information Sharing and Capacity Development in Asia and the Pacific, Bangkok, 27-28 August 2019 (Regional action plan to combat the negative impacts of SDS in Asia and the Pacific)

• Sand and Dust Storms Risk Assessment in Asia and the Pacific, Geneva, 30-31 October 2019 (Projection of impacts of SDS by 2030 based on historical records and analysis of trends)
Way foreword:

• Regional sand and dust storms risk assessment

• Regional and international consultation on sand and dust storms risk reduction

• Developing regional plan of action on sand and dust storms

• Expanding regional and international networking and partnership

Examples: ADRC, UN Coalition on Sand & Dust Storm, UNCCD, WMO (SDS-WAS), UN Resident Coordinators (To leverage UN capacities to the extent possible fully aligned with the UN System Development Reform of the SG).
Thank You

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