NATIONAL DISASTER MANAGEMENT AUTHORITY

GENERAL INSTRUCTIONS

NATIONAL SIMULATION EXERCISE - 1 / 2025 "SUMMER RESILIENCE"

1. **General**. Pakistan is highly vulnerable to a wide range of natural disasters, due to its diverse geography, climatic conditions and rapid urbanization. Located in South Asia, it faces significant risks from earthquakes, floods, droughts, landslides, sea water rising / intrusion and cyclones all of which pose significant challenges to both human lives and the economy. Pakistan's temperature has warmed up considerably since 1960s. Analysis of the data from last eight decades reveals that annual mean temperature of the country has risen by over 0.74°C, much greater than the rise in temperature across the globe. This rise in temperature is apparent over almost the entire country and is greater over major parts of south-eastern and southwestern Sindh, Balochistan and eastern parts of Punjab. Overall, annual hot days have increased by 14 days while annual cold nights have decreased by two days.

2. The northern regions of Pakistan lie in the seismically active zone of the Himalayas, making them prone to devastating earthquakes. The monsoon season often brings heavy rainfall leading to severe flooding. The Indus River basin is particularly prone to flooding, which can result in widespread displacement, destruction of crops and economic losses. The coastal regions of Pakistan are at risk from cyclones and tropical storms that originate in the Arabian Sea. These storms can cause significant damage to infrastructure and pose serious threats to human life.

3. Climate change is intensifying the frequency and severity of these disasters, making it imperative for Pakistan to invest in disaster risk reduction and management strategies. Effective early warning systems, resilient infrastructure and community-based preparedness initiatives are essential to mitigate the adverse effects of natural disasters. As Pakistan continues to develop, addressing these vulnerabilities remains crucial to safeguarding its people and economy.

4. As part of NDMA's comprehensive, proactive and all-hazard approach, the **National Simulation Exercise** (SimEx) - **1 / 2025** titled "**Summer Resilience**" is being planned for disasters likely to occur during the spring / early summer season. The exercise-specific activities will span three weeks of preparation, with the exercise conduct in **last week February 2025**. Representatives from all relevant disaster management departments, stakeholders, and partners will participate in the exercise in form of syndicates, alongside observers from various government departments and development partners.

5. **Aim**. To evaluate and enhance preparedness, coordination and response capabilities among government agencies, emergency services and communities by identifying strengths, resource availability / gaps and areas for improvement, to foster resilience, improve public awareness and ensure a unified and effective response to summer emergencies.

6. **Objectives**

   a. To refine a coordinated sequence of actions at all levels for adaptive resilience against impending summer threats to human life and the economy.

   b. To minimize impact of natural and human induced disasters, through readied and arrayed national preparedness.

   c. Assess readiness of agencies and communities to respond effectively to summer disasters.

   d. Strengthen collaboration among DM responders at all levels and to evaluate effectiveness of existing response plans and procedures.

   e. Pre-calculate impact and extents of disasters' reach to pre-estimate losses, damages and needs vis-à-vis availability and distribution of necessary resources, including personnel equipment and supplies.

   f. Increase community awareness and promote individual / family readiness and foster a culture of preparedness and resilience within communities to better withstand and recover from summer disasters.

   g. Involve a diverse range of stakeholders, including government agencies, NGOs and community organizations in planning and execution of exercise.

   h. To seek established, effective and wide-reaching risk communication of impending disasters to all communities under threat as well as DM responders.

   i. To practice identifying pre-reconnoitred sites for hosing displaced persons after a disaster and calculating the volume of needed supplies.

   j. To practice mobilizing disaster management reserves, individuals trained by NGOs and rescue organizations who are enlisted as an experienced national force; prepared with minimum refresher training and supported by local volunteers.

   k. To enable coordination mechanism with UN organisations, major development partners, diplomatic community, international media and INGOs for targeted and assured support, based on realistic estimates.

7. **Intended Lessons**

   a. Technology can be used to create dividend in early warnings, saving lives and infrastructure.

b. Synergy is critical and possible through greater and refined understanding of each other's strengths and capacity limitations, achieving maximized interoperability amongst local, zonal, national, global, military and private sector.

c. Robust, modern and accurate Early Warning System is a key element of climate change adaptation and risk reduction to avoid or at the minimum reduce damages caused from natural hazards.

d. Significance and improvement of risk communication system utilizing all mediums is essential for public awareness to reduce the impact of any disaster.

e. Vulnerability / hazard mapping at local scale is necessary to serve as base for formulation of disaster management plan and to identify hazard prone areas and safer areas with evacuation places.

f. Area profiling to include public sector infrastructure and human database is essential for expeditious rescue, judicious relief and prudent rehabilitation.

g. Advance, realistic and joint planning involving all DM stakeholders is necessary for synergetic and cost-effective employment of DM resources.

h. Prior / close coordination and effective communication between tiers of DM is of immense importance for a timely and appropriate response to any natural hazard.

i. Streamline procedures, well-rehearsed drills and coordinated responses pay dividend in face of any disastrous situation.

j. Community awareness, involvement and participation in simulation exercises and evacuation drills is of significance to enhance risk awareness, understanding and to improve outreach / education.

k. Hazard specific, customized and pre-identified stocking and pre-placing of resources is necessary not only to ensure prompt response and economy of effort / resources.

8. **Requirements / Responsibilities**. **Annex A**.

9. **Exercise Scenarios**

a. A multi-disaster and sectoral based approach will be employed to practice all DM responders in respective regions.

b. Planned scenarios are as under: -

(1) Forest fire in ICT and KPK.

(2) Heatwave in Punjab and Sindh.

(3) Cyclone in Balochistan coastal region.

(4) Sea water intrusion in coastal areas of Sindh.

10. **Exercise Groups / Syndicates**

a.	Control Group	-	13 x Members.
b.	NDMA	-	4 x Syndicate (20 x Members).
c.	Federal / Ministries	-	1 x Syndicate (8 x Members).
d.	Provincial Syndicates	-	3 x Syndicates (22 x Members).
e.	Armed Forces	-	1 x Syndicate (5 x Members).
f.	Humanitarian Agencies	-	1 x Syndicate (20 x Members).
g.	Media	-	1 x Syndicate (4 x Members).
h.	Academia	-	4 x Members (Attached with NIDM).
i.	Industry	-	4 x Members.
j.	Observers	-	Members ex diplomatic missions.

11. **Participation**

a. **Exercising Group**

(1) **National Level**

(a) NDMA.

(b) National Institute of Oceanography / Ministry of Science and Technology.

(c) MoCC.

(d) Joint Staff HQ & Services.

(e) Pakistan Maritime Security Agency (PMSA).

(f) UN Agencies.

(g) Academia.

(h) Industry.

(2) **Provincial Level**

(a) PDMAs / selected DDMAs.

(b) ICT administration.

(c) Emergency Services / USAR Teams.

(d) Environment, Climate Change & Coastal Development Department, Government of Sind

(e) Relevant line departments.

b. **Observers**

(a) Diplomatic Missions.

(b) UN partners, INGOs / NGOs.

12. **Conduct**

a. **Methodology**

(1) SimEx will be conducted at NEOC / NDMA HQ Islamabad.

(2) It will be tabletop / scenario-based one day exercise.

(3) All syndicates will be grouped / housed in NEOC.

(4) Syndicates will be required to present responses on provided templates (will be shared through e-mail).

(5) Exercise syndicates will operate from central venue through depicted HQ of respective authorities / departments. DDMAs / selected departments will participate in the exercise through ZOOM. ZOOM link will be shared with concerned departments through e-mail / WhatsApp.

(6) Syndicate representatives present in Islamabad are requested to attend in person while out station officers may attend online; ZOOM link will be shared with concerned departments through e-mail / WhatsApp.

b. **SimEx Timelines**

(1) Issuance of **General Instructions** and **Scenarios** - **10 January 2025**.

(2) **First** staff level **coordination conference** – **4 February 2025**.

(3) **Final** staff level **coordination conference** - **19 February 2025**.

(4) NDMA **administrative aspects** finalisation - **22 February 2025**.

(5) Finalisation of **media coverage coordination** of the event - **23 February 2025**.

(6) Exercise **Conduct** - **26 February 2025**.

c. **Exercise Time vis-à-vis Projected Time**

Ser	Scenario	Hazard	Exercise Time	Projected Time
(1)	1	Cyclone	May 2025	June 2025
(2)	2	Heat Wave	Mar 2025	May 2025
(3)	3	Forest Fire	May 2025	May 2025
(4)	4	Sea Water Intrusion	Perpetual	

d. **Exercise Control**

(1) **Chief of Exercise**. Chairman NDMA.

(2) **Chief Coordinator**. Executive Director (Plans), NDMA.

(3) **Chief Control**. Snr Director (Plans-A), NDMA.

(4) **Control Staff**. Plans Wing.

13. **Supporting Aid**

    a. Relevant maps of Pakistan / provinces / exercise areas (hazard and impact maps) will be provided by Tech Team.

    b. Population and livelihood statistical baseline data will be provided by Tech Team.

    c. Situation Report (SITREP) / presentation templates will be provided by Operations Wing.

14. **Instructions for Syndicates**

    a. Syndicates are required to bring all necessary data regarding their respective provinces and exercise areas.

    b. Syndicate responses will be submitted by all participants in Power Point format (already provided) before commencement of the exercise.

    c. Responses will be presented by respective syndicate leaders.

    d. Each syndicate will be assigned with 1 x Exercise Control Staff to solve queries, if any.

15. **Instructions for Control Staff**

    a. Separate area for Exercise Control will be designated.

    b. Control Staff to be assigned for each syndicate and will be expected to maintain close liaison with their respective syndicates.

    c. Control Staff to provide narratives and assist syndicates in progression of the scenario, including role playing as necessary.

    d. Ensure that respective syndicates are prepared to present their responses at the closure of each narrative.

    e. Each Control is required to analyse the responses submitted by their respective syndicates for gaps / weaknesses and note down way forward.

    f. Control Staff to ensure attendance at their respective syndicate presentations and provide their insight at the conclusion of each syndicate presentation.

    g. Control Staff to attend exercise de-brief and provide detailed analysis and input from each syndicate.

16. **Conduct of Presentation**. To maintain uniformity in responses and follow stipulated timelines, following guidelines are to be followed by all presenters.

    a. Hazards / incidents, locations of camps and any reference to locations will be presented on satellite imageries.

    b. Briefings will be limited to minimum number of power point slides.

    c. Format slides will be shared before the commencement of exercise.

d. Resources deployed and stocks utilised for any response will be as per the respective plans submitted before commencement of exercise.

e. Provincial briefs will encompass responses from all stakeholders, including various departments within the syndicate, such as PDMAs, ICT, Rescue 1122, line departments, federal departments and humanitarian organizations.

f. Satellite monitoring data will be shared by Tech Team NDMA.

g. Tech Team NDMA will issue area scans and vulnerability / risk indexes.

17. **Administrative Aspects**. Tea break / refreshment arrangements to be ensured at exercise venue by Admin Directorate NDMA.

18. **Media Directorate**. Coverage by state media such as PTV to be arranged / coordinated by Media Directorate.

Annexes

A. Intended Lessons / Responsibilities.

B. Master Scenario.

C. Opening Scenario.

D. Exercise Scenarios (Scenario 1 - 4).

Annex - A

INTENDED LESSONS / RESPONSIBILITIES

Ser	Intended Lesson	Requirement	Responsibility
1.	Scientific technology watch can be used to create dividend in early warnings, saving lives and infrastructure.	Use of advanced monitoring tools and data integration technology for risk assessment and early warning.	Tech Team NDMA / PMD / PDMAs
2.	To achieve synergy, it is crucial to recognize each other's strengths and limitations ensuring the maximum interoperability among local, zonal, national, global, military, and private sectors.	Enhancing coordination for data sharing, stockpiling, risk assessments, resource mapping, and sector alignment through standardized guidelines, plans, and joint training.	NDMA / PMDAs / Armed Forces / UN / INGOs / NGOs / Rescue Agencies
3.	Robust, modern and accurate Early Warning System is a key element of climate change adaptation and risk reduction to avoid or at the minimum reduce damages caused from natural hazards.	Develop a comprehensive alert plan aligned with weather forecasts and hazard zones, supported by reliable and inclusive communication channels to ensure timely and accurate disaster information reaches all communities, including remote areas.	NDMA / PMDAs / PMD / FFC / PMD / NIDM
4.	Significance improvement of risk communication system utilizing all mediums is essential for public awareness to reduce the impact of any disaster.	Establish advanced communication infrastructure, integrate multi-channel dissemination tools, provide targeted training, and ensure continuous updates for effective risk communication.	NDMA / PMDAs / DDMAs

Ser	**Intended Lesson**	**Requirement**	**Responsibility**
5.	Vulnerability / hazard mapping at local scale is necessary to serve as base for formulation of disaster management plan to identify hazard prone areas and safe areas with evacuation places.	Conduct extensive surveys, employ GIS technology, engage local people, incorporate historical data, and make frequent updates for accurate vulnerability and hazard mapping.	NIDM / PMDAs / / SUPARCO
6.	Area profiling to include public sector infrastructure and human database is essential for expeditious rescue, judicious relief and prudent rehabilitation.	Develop a comprehensive framework for data collection, incorporating GIS tools to map public infrastructure and population demographics.	NDMA / PMDAs / DDMAs
7.	Advance, realistic and joint planning involving all DM stakeholders is necessary for synergetic and cost-effective employment of DM resources.	Establish a collaborative planning process with all disaster management stakeholders. Develop a shared framework for resource allocation, incorporating realistic scenarios, budget analysis, and efficiency metrics.	NDMA / PDMA / Armed Forces / DDMAs / UN, INGOs / NGOs
8.	Streamline procedures, well-rehearsed drills and coordinated responses pay dividend in face of any disastrous situation.	Input, future planning in terms of simulation and drill exercises and best practices from Accademia.	NDMA / Academia
9.	Community awareness, involvement and participation in simulation exercises and evacuation drills has the significance to	Design and implement community-based awareness programs, integrating simulation exercises and evacuation drills.	NDMA / PDMA / Emergency Responders / NGOs

Ser	**Intended Lesson**	**Requirement**	**Responsibility**
	enhance risk awareness, understanding to improve outreach / education.		
10.	Hazard specific, customized and pre-identified stocking and pre-placing of resources is necessary not only to ensure prompt response and economy of effort / resources.	Develop and implement standardized procedures for stockpiling, regularly updating inventory, and ensuring strategic placement for prompt response.	NDMA / PDMA / INGOs / NGOs

Annex - B

NATIONAL SIMULATION EXERCISE - 1 / 2025 "SUMMER RESILIENCE"

MASTER SCENARIO

1. Pakistan is increasingly vulnerable to a range of summer hazards that pose significant threats as climate change exacerbates their intensity and frequency. During the months of summer, heatwaves have become a critical concern, particularly in Southern Punjab and Northern Sindh, with temperatures often soaring above 45°C. These extreme heat events not only lead to severe health risks, including heat exhaustion and heatstroke, but also strain agricultural productivity, as crops suffer from heat stress and water scarcity. The urban centres, such as Karachi, Hyderabad, Multan, Rahim Yar Khan etc face additional challenges due to the urban heat island effect, where concrete structures amplify heat retention, leading to dangerously high temperatures that impact the cities' most vulnerable population, particularly those without access to adequate cooling facilities.

2. In addition, the rising temperatures and prolonged dry spells exuberate the incidents of forest fires every year. These fires, often ignited by human activities, can spread rapidly, devastating vast areas of forest land. The consequences are severe, leading to loss of biodiversity, habitat destruction and increased carbon emissions. Additionally, the socio-economic impact on local communities, dependent on forests for their livelihoods, is profound.

3. Along the coastal line of Balochistan, the threat of cyclones looms, with the Arabian Sea increasingly generating severe storms that can bring destructive winds, heavy rainfall, and storm surges. These cyclones can devastate coastal communities, leading to loss of life, displacement and extensive damage to infrastructure, including homes, roads and essential services. The government's response mechanisms are often tested during such events, highlighting the need for improved early warning systems and community preparedness programs.

4. In the northern regions of Pakistan, the phenomenon of glacial lake outburst flooding (GLOF) presents another critical hazard. As climate change accelerates glacial melt, the risk of sudden releases of water from glacial lakes poses a significant threat to downstream communities, infrastructure and agricultural lands. These outbursts can lead to catastrophic flooding, causing loss of life and property and disrupting livelihoods in an already vulnerable area.

5. Lastly, the phenomenon of seawater intrusion in the Sindh coastal areas further complicates the overall hazard landscape of Pakistan. Rising sea levels and increased

salinity threaten the freshwater aquifers that are crucial for both drinking water and irrigation in this densely populated region. The intrusion compromises agricultural productivity and water security, exacerbating existing challenges related to food and water scarcity.

6. Addressing these interconnected summer hazards requires a multifaceted approach that encompasses disaster risk reduction, community engagement and sustainable environmental management. By enhancing resilience through improved infrastructure, early warning systems and public awareness campaigns, Pakistan can better prepare for and mitigate the impacts of these summer hazards, safeguarding the lives and livelihoods of its people.

Annex - C

OPENING SCENARIO

1. Based on the seasonal forecast and the anticipated hazards of summer, the Prime Minister has directed all stakeholders to proactively prepare, especially for multi-hazard situations. This includes enhancing inter-departmental and organizational coordination, ensuring the deployment of machinery, and guaranteeing the availability of trained personnel.

2. Considering the prevailing situation, there is a likelihood of increased cyclonic activity, particularly in the Arabian Sea, which may affect coastal regions. The forecast suggests that cyclones, intensified by changing oceanic conditions, could lead to severe coastal flooding, strong winds and widespread damage to infrastructure and livelihoods. Additionally, prolonged heatwaves are expected to develop across the country, with temperatures likely to reach dangerously high levels, creating significant risks for public health, agriculture and energy systems. These heatwaves could also exacerbate the impact of other disasters, such as water scarcity, wildfires and glacial melting. Furthermore, rising sea levels and the occurrence of storm surges are expected to worsen the risk of sea water intrusion along coastal areas.

3. **Preparations / Requirements (To be submitted before commencement of Exercise by all Syndicates)**

   a. Resource mapping of manpower and equipment / machinery.
   b. Audit of stocks to identify need and gaps.
   c. Updated contingency plans.
   d. Conduct of mock exercises.
   e. Coordination with all regional and national stakeholders.
   f. Awareness campaign for general awareness and specific for at-risk / vulnerable population.
   g. Identification of gaps ascertained during audit process and plan for bridging the gaps on immediate basis and long-term plan for meeting the needs.
   h. Camp sites identified (relief and medical).

4. **Guidelines for Presentation of Responses**. To maintain uniformity in responses and follow stipulated timelines, following guidelines are to be followed by all presenters.

   a. Hazards / incidents, locations of camps and any reference to locations will be presented on satellite imageries.
   b. Briefings will be limited to minimum number of power point slides.

c. Format slides will be shared before the commencement of exercise.

d. All PEOCs and selected DEOCs will remain online during the planned responses.

e. Resources deployed and stocks utilised for any response will be as per the respective contingency plans and latest plans submitted before commencement of exercise.

f. Provincial briefs will cover responses from all stakeholders such as all departments of the syndicate; PDMAs, Rescue 1122, line departments, Federal departments and humanitarian organizations.

Annex - D

SCENARIO 1 - CYCLONE

1. In line with the weather forecast and the projections for Summers-2025 issued by NDMA in March 2025, a powerful cyclone, named Cyclone Kiran, has been formed in the Arabian Sea and is heading towards the coastal line of Balochistan likely affecting Gwadar, Ormara, Pasni and Jiwani. The cyclone, classified as a Category 3 storm, is projected to make landfall near Gwadar and is likely to bring with it sustained winds exceeding 120 km/h and heavy rainfall, threatening coastal communities. As the cyclone approaches, high waves and storm surges threaten coastal infrastructure, including fishing ports and residential areas.

2. NDMA has issued alerts and advisories prompting immediate evacuation measures for vulnerable coastal communities, mobilization of emergency services, setting up of relief shelters and to ensure essential supplies. Day wise details rea under:-

a. **22 May 2025**. A Low-Pressure System (LPS) developed in the western Arabian Sea on 22 May 2025. Currently, the system is located approximately 750 km away from the Gwadar coast. Due to conducive environmental conditions, including higher sea surface temperatures (28°C), low vertical wind shear, increased upper-level divergence, a dominant Indian subtropical ridge, and strong convective currents, the system is expected to intensify into a Tropical Depression by 23rd May. It is anticipated to move towards the Balochistan coast, influenced by the dominance of the Indian subtropical ridge over the Oman ridge.

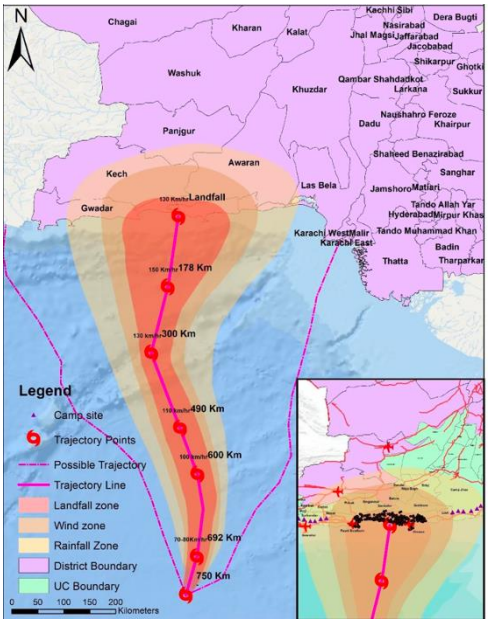
b. **23 May 2025**. A Tropical Depression (TD) has developed over the eastern Arabian Sea, with maximum sustained wind gusts of 70–80 km/h. The system is expected to intensify further due to favorable environmental conditions. It is currently located approximately 692 km away from the Gwadar coast. Most models and bathymetric analyses indicate that the system Page will maintain its trajectory towards the Balochistan coast and strengthen into a storm system.

c. **24 May 2025**. The Tropical Storm System (TSS) over the eastern Arabian Sea is intensifying, with maximum sustained wind gusts of 100 km/h. The storm's eye is currently located 600 km south of Ormara. According to most models, meteorological and bathymetric analyses, the system will continue moving towards the Balochistan coast and is likely to develop into a Tropical Cyclonic Storm System (Category 1 cyclone). As per the WMO’s international taxonomy for cyclogenesis, the cyclone will be named “Kirn.”

d. **25 May 2025**. Category 1 Cyclonic Storm Gati over the eastern Arabian Sea is further intensifying, with maximum sustained wind gusts of 110 km/h. The eye is currently located 490 km southeast of Pasni. Most models and analyses indicate that the system will maintain its trajectory towards the Balochistan coast and strengthen into a Severe Tropical Cyclonic Storm System (Category 2 cyclone).

e. **26 May 2025**. Category 2 Severe Cyclonic Storm Gati over the eastern Arabian Sea is intensifying further, with maximum sustained wind gusts of 130 km/h. The storm's eye is currently located 300 km southeast of Gwadar. Models and analyses suggest that the system will continue towards the Balochistan coast and develop into a Category 3 Severe Tropical Cyclonic Storm.

f. **27 May 2025**. Category 3 Extremely Severe Cyclonic Storm Gati over the northeastern Arabian Sea is currently located 178 km southeast of Gwadar. The cyclone has reached its peak intensity, with maximum wind gusts of 150 km/h. As the cyclone approaches land, it is expected to weaken and make landfall near Ormara and Pasni on 28th May as a Category 2 Cyclonic Storm.



g. **28 May 2025**. Category 2 Severe Tropical Cyclone Gati is over the Arabian Sea and is expected to make landfall between Ormara and Pasni in the evening of 28th May, with maximum wind gusts of 130 km/h. The estimated population in the immediate landfall zone is approximately 77,743.

3. **Response Required**

a. **NDMA Technical Team**

(1) Impact model to include likely area to be impacted, population likely to be affected and likely safe areas from the cyclone for setting up of relief camps.

(2) Risk assessment to include vulnerable areas, development of hazard maps.

b. **National Institute of Oceanography / Ministry of Science and Technology**

(1) Comprehensive model to simulates cyclone behaviour, its intensity, trajectory, storm surge and related environmental impacts incorporating historical cyclone data and local climatological factors.

(2) Analysis of vulnerability of critical infrastructure and communities along the coast.

c. **NDMA Operations Wing**

(1) Assessment of situation.

(2) Resource mapping of required equipment / machinery for response to cyclone, emergency response teams and emergency supplies.

(3) Medical and relief camps sites, coordination measures, responsibilities.

(4) Coordination with Armed Forces / LEAs and Federal Departments for augmenting response and relief measures.

(5) Need gap analysis of required relief, if any.

(6) Assistance required by humanitarian agencies including INGOs, UN agencies, if any.

d. **NDMA Plans Wing**

(1) Updated e-MHVRA of the likely impact area.

(2) Resource mapping of INSaR teams.

(3) Humanitarian partners / NGOs / INGOs available in the area and any requirement of Clusterization.

(4) Medical and relief camps sites, coordination measures, responsibilities of humanitarian partners / NGOs / INGOs.

e. **Pakistan Coast Guards**

(1) Assessment of situation.

(2) Resource mapping of required equipment / machinery for response to cyclone and assist in evacuations.

(3) Coordination with PDMA, DDMAS, Armed Forces / LEAs and Federal Departments for augmenting response and relief measures.

(4) Need gap analysis of required relief, if any.

f. **PDMA Balochistan**

(1) Assessment of situation and identification of likely impact area.

(2) Resource mapping of required equipment / machinery for response to cyclone, emergency response teams and emergency supplies.

(3) Public awareness campaign plan.

(4) Administrative actions / measures along the coast line such as bar public and fishermen entering into the sea.

(5) Identification of safe locations for medical and relief camps sites, coordination measures and responsibilities.

(6) Deployment plan of emergency response teams to manage evacuations, and provide immediate assistance.

(7) Evacuation plans including arranging of transport for high-risk zones in coordination with local law enforcement and armed forces, coast guard, maritime security agency.

(8) Pre-position relief supplies, including food, water, blankets and medicines etc.

(9) Need gap analysis and assistance required, if any.

SCENARIO 2 - HEAT WAVE

1. In-line with the weather forecast and the projections for Summers-2025 issued by NDMA in March 2025, a prolonged heatwave is expected to impact the various regions of Pakistan, specifically in Southern Punjab and Sindh (Rahim Yar Khan, Bahawalpur, Bhakkar, Jacobabad, Larkana, Badin and Karachi districts). The high pressure in the upper atmosphere is likely to cause an upward trend in daily temperatures. During this time of year, an increase of 4 to 6 degrees Celsius above normal average temperature has previously been documented.

2. Based on projections and analysis by the NDMA Meteorological Team, Pakistan is anticipated to experience heatwave conditions during May and June. While temperatures are expected to rise further in July and August, the onset of the monsoon season will alleviate the intensity of heatwave conditions. In January 2025, projected data on relative humidity and temperature, combined with meteorological seasonal forecasts, indicated the potential development of heatwave scenarios in the provinces of Punjab and Sindh.

3. NDMA has maintained close monitoring of heatwave parameters. There is a significant likelihood of heatwave conditions prevailing in specific regions, particularly in the districts of Rahim Yar Khan and Rajanpur in Punjab, as well as Sukkur and Jacobabad in Sindh. These areas are expected to experience a temperature increase of 4°C to 6°C above the seasonal average for three to four consecutive days during the third week of May 2025 (15^{th} to 20^{th} May 2025), as depicted in Fig. 2. This temperature anomaly may lead to a rise in heat-related illnesses, dehydration, and cardiovascular disorders among the affected populations.

4. **Response Required**

   a. **NDMA Technical Team**

      (1) Impact model to include likely area to be impacted, population likely to be affected.

      (2) Risk assessment to include vulnerable areas, development of hazard maps.

   b. **NDMA Plans Wing**

      (1) Humanitarian partners / NGOs / INGOs available in the area and any requirement of Clusterization.

      (2) Medical and relief camps sites, coordination measures, responsibilities of humanitarian partners / NGOs / INGOs.

   c. **PDMA Sindh**

      (1) Assessment of situation and identification of likely impact area.

      (2) Resource mapping and response plan including following: -

(a) Establishment of heatwave shelters and cooling centres.
(b) Deployment of medical teams for heat-related emergencies.
(c) Mobilization of ambulances and mobile clinics.
(d) Emergency water distribution via tankers and stations.
(e) Monitoring and ensuring equitable water supply.
(f) Provision of stable power supply to essential facilities.
(g) Collaboration with NDMA, PMD and local governments for coordinated response.

(3) Public awareness campaign plan.

(4) Need gap analysis and assistance required, if any.

SCENARIO 3 - FOREST FIRE

1. Forest fires are one of the most destructive natural disasters in the country, annually causing significant loss of life and property. Forest fires are an ever-present hazard particularly in the Northern Mountains of KP, Punjab and Balochistan, due to several factors, including the dry climate, barren environment, extensive grazing, human encroachment on forest land and highly combustible crops. Traditionally, May and June every year have been historically recognized as the hottest and driest months in Pakistan. However, the impact of climate change is evident as hot days are now increasingly observed in March and April as well. This shift in weather patterns has led to frequent occurrences of forest fires during these months, attributed to the combination of dry conditions and high temperatures.

2. During summers of 2025 so far, a number of localised forest fire incidents occurred, however, were responded and contained with local resource. However, in 3rd Week May 2025, two major forest fire erupted that are beyond response capacities of local authorities; as under:-l

a. **Forest of Chakdara**. A forest fire ignited in Chakdara / KPK forest on the afternoon of May 18, 2025. The forest primarily comprises deciduous and needle-leaf trees, which shed their leaves in the summer to conserve moisture. However, the accumulation of dry leaves and tree bark is providing ample fuel for the fire to intensify. The prevailing meteorological conditions are exacerbating the situation, with south-eastern winds blowing at 9-11 km/h and temperatures reaching 39-40°C. The fire currently threatens a wide area west of Chakdara city, and is anticipated to advance toward Ramyal village.

b. **Margalla Hills (ICT-KP)**. A forest fire erupted in Margalla / ICT Hills on May 21, 2025, with temperatures soaring to 39-40°C and south-westerly winds blowing at speeds of 10-12 km/h. The fire is likely to intensify and spread rapidly, affecting an area of 28.3 km² spanning Islamabad and parts of KP. The forest primarily comprises deciduous and needle-leaf trees, including deodar trees, which shed their leaves in the summer to conserve moisture. However, the accumulation of dry leaves, tree bark, and other residues is providing abundant fuel for the fire to grow stronger. These conditions, combined with elevated temperatures, low relative humidity, and the presence of dry winds, pose a significant threat to the natural habitat, nearby communities, and the ecological balance of the region.

c. Both forest fires have engulfed a large area due to prevailing dry conditions, high temperatures and strong winds with the blaze already extending over an area of

48 and 20 square kilometres respectively. Immediate intervention is crucial to prevent further escalation and protect both the forested area and the nearby communities.

3. **Response Required**

   a. **PDMA KPK and ICT Administration**

      (1) Resource mapping of firefighting assets / equipment.

      (2) Assessment of situation (to include likely affected area, population affected, biodiversity / wildlife affected).

      (3) Emergency Response / Evacuation plan, if required.

      (4) Administrative and policy measures adopted to prevent any such event in future.

      (5) Case studies of previous forest fire incidents; causes, preventive measures proposed and punitive actions undertake.

      (6) Engagement with local communities / volunteers - NIDM

   b. **IC Wing**. Resource mapping and coordination status for arranging aerial firefighting aircrafts from friendly countries.

SCENARIO 4 - SEA-WATER INTRUSION

1. Sea-water intrusion is a growing environmental issue in the coastal areas of Sindh, exacerbated by both natural and human factors, leading to the salinization of groundwater resources. The coastal districts of Sujawal and Thatta are constantly facing the threat of sea intrusion and salinity and while the Indus Delta in Thatta is one of the fastest-sinking deltas in the world. This phenomenon is driven by the over-extraction of groundwater for agricultural and domestic use, combined with the reduction in natural freshwater flow due to irregular rainfall and snowfall patterns in the catchment areas of rivers. The increasing salinity of aquifers has severely impacted agricultural productivity, as crops reliant on freshwater irrigation suffer from salt damage. Moreover, local communities are facing challenges in accessing clean drinking water, further contributing to health problems. As climate change leads to rising sea levels, the risk of seawater intrusion is likely to intensify further, threatening both food security and public health.

2. **Response Required**

   a. **NDMA Technical Team**

      (1) Impact model to include likely area to be impacted, population likely to be affected.

      (2) Risk assessment to include vulnerable areas, development of hazard maps.

   b. **NIDM**

      (1) Initiatives undertaken / progress to link relevant universities of Pakistan with universities aboard on phenomenon of sea-water intrusion.

      (2) Global best practices to meet challenges of sea-water intrusion.

   c. **Environment, Climate Change & Coastal Development Department, Government of Sindh**

      (1) Existing and projected impact of sea-water intrusion on the environment, communities and agricultural productivity in the province of Sindh.

      (2) Medium / long-term initiatives / policies and progress made so far to address impacts of seawater intrusion, specially covering following: -

         (a) Policy and regulatory frameworks.

         (b) Groundwater management.

         (c) Strengthening of coastal protection infrastructure.

         (d) Monitoring and early warning systems.

         (e) Public awareness and community engagement.

         (f) Collaborations with other stakeholders.