

National Monsoon Contingency Plan-2022

General

1. Pakistan experiences Monsoon Season from Mid-June to Mid-September every year with variable intensity of rainfall. Floods (**flash, riverine and urban floods**) have been the most recurring phenomenon along with other hazards like **cloudburst, landslides and Glacial Lakes Outburst Floods (GLOFs)** causing various challenges to national, provincial and district levels Disaster Management (DM) systems in the country. The recent experience of Monsoon-2021 highlight factors like variations in forecasted and actual rainfall, irregular distribution of Flood Fighting Equipment (FFE) in major cities to tackle urban flooding, blockage of drainage system, weak sewerage disposal system and unplanned urban development projects, compounding the urban flooding phenomenon in the major metropolis. Drought like situation is another phenomenon which occurs side by side in certain areas of the country owing to low rainfall.

2. National Disaster Management Authority (NDMA) under clause 9(a) and 9(b) of NDM Act 2010 (enclosed at **Annex A**) deals with whole spectrum of DM activities in the paradigm of **PR³** (Preparedness, Response, Recovery and Rehabilitation). NDM Act 2010 is structured in such a way that DM is a subject devolved to the Provinces and other federating units. Nonetheless, NDMA gives directions and issues guidelines / early warnings to various federal and provincial departments and DM agencies to initiate mitigation measures for potential disaster risks and contingency plans for any likely disaster situation arising out of Monsoon. Recognizing the threat posed by the recurrent disasters vis-à-vis vulnerabilities, NDMA has developed a comprehensive National Disaster Management Plan (NDMP) – 2013-2022 encompassing disaster interventions. The NDMP is further augmented by a National Disaster Response Plan – 2019, which gives broad guidelines for response related activities. In the same context, issuance of Monsoon Contingency Plan is a yearly practice, undertaken before the start of every Monsoon Season.

3. National Monsoon Contingency Plan-2022 has been prepared in coordination with all DM stakeholders both at federal and provincial levels based on analysis of seasonal forecast by the PMD and likely impacts of climate change. In this Plan, explicit

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guidelines have been laid down for all DM tiers and other relevant stakeholders for mitigation of likely hazards, preparedness against most probable and worst-case scenarios and mounting an effective and timely response to a situation resulting from Monsoon.

4. This plan has been prepared incorporating lessons learnt from Monsoon-2021, mapping available assets, identifying the needs for mobilizing additional resources, clarifying the roles and responsibilities and establishing coordination mechanism for effective response to likely as well as worst case scenario. In this regard, NDMA engaged all DM stakeholders to identify and map resources and shore up the preparatory / mitigation measures being undertaken for the upcoming Monsoon season. This also includes meetings of Strategic Coordination Forum, co-chaired by UNRC / HC and Chairman NDMA for enhanced coordination with United Nations and other humanitarian partners.

Overview of Monsoon-2021

5. **Unfolding of Monsoon.** Monsoon Season 2021 unfolded having 13 rain spells starting from 01st July 2021 and extended up to 15 October 2021 due to Gulab Cyclone. During Monsoon 2021, as per PMD overall, -9% below normal rainfall was recorded in whole country against the prediction of near normal rainfall given as a seasonal forecast. Necessary advisories and alerts were issued to all concerned agencies to initiate mitigation works in their respective areas well in time with special focus on urban flooding. Following significant events were reported during Monsoon 2021: -

- a. GLOF event in Naltar Bala (Gilgit) and Badswat (Ghizer) on 5th and 17th July 2021 respectively. A bus en-route to Gilgit was hit by a landslide on 14th July 2021.
- b. Urban flooding in Abbottabad on 11th July 2021, including flooding of Ayub Medical Complex and other parts of the city.
- c. Heavy rains occurred in the area of Salkhala Village, District Neelum on 13th July & Landslide at Tehsil Hattian, District Neelum on 20th July 2021.
- d. Rains triggered flash floods in 4x Valleys of District Diamer on 28th July 2021, causing road blockages at 3x points, besides damaging Khiner Valley

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- Road. Flash flooding occurred at Hashupi Nullah (Shigar) on 28th July 2021 and damaged 500 KW Headwork Hashupi, Phase-II.
- e. Urban Flooding in Sector E-11/2, Islamabad on 28th July 2021 was something new and it damaged numerous houses, businesses and vehicles.
 - f. A Cyclonic Storm 'Gulab' moving westward from Bay of Bengal affected Karachi on 25th September 2021 while remaining 2200 km away.
 - g. **Damages/ Losses**. Detailed assessment of damages and losses that occurred during the Monsoon-2021 was compiled to ensure optimum recovery and rehabilitation of affected areas. State of damages / losses caused by Monsoon rains in the country (from 15th June to 7th October 2021) is given in Table.1.

Provinces /Regions	Deaths				Injured				Houses Damaged	
	M	F	C	T	M	F	C	T	P	F
ICT	-	1	1	2	-	-	-	0	0	0
Punjab	40	5	8	53	116	15	15	146	43	11
KP	30	17	42	89	50	27	56	133	113	11
Sindh	3	5	7	15	3	3	1	7	-	150
Balochistan	15	6	3	24	8	-	1	9	357	80
Gilgit-Baltistan	3	2	1	6	-	-	-	0	-	15
AJ&K	4	3	2	9	1	2	1	4	22	34
TOTAL	95	39	64	198	178	47	74	299	535	301

(M-Male, F-Female, C-Children, T-Total, P-Partial, F-Full)

Table-1 – Summary of Damages / Losses - Monsoon-2021

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6. Actions Taken by NDMA

- a. **Activation of NEOC and AFCC**. National Emergency Operation Centre (NEOC) and Army Flood Control Centre (AFCC) remained active for round the clock monitoring of developing situation in the country.
- b. **NDMA Daily Situation Report (SITREP)**. Based on the weather patterns and forecast, NDMA included “Actionable Recommendations” in the daily SITREP to further augment the endeavours of the relevant stakeholders.
- c. **Deployment of Earth Moving Machinery**. Timely placement of heavy earth moving machinery was ensured at key locations for clearance of landslides/ debris especially along National Highways.
- d. **Aviation Support for Immediate Rescue and Relief**. NDMA coordinated aviation support from Pakistan Army for rescue and relief activities in Gilgit Baltistan (GB).
- e. **Provision of Relief Items**. NDMA with the support of various stakeholders provided relief items including tents, tarpaulins, blankets, mosquito nets, kitchen sets, water purification tablets, food packs, medicines and water bottles for flood affected areas.
- f. **Monsoon Coordination Conferences**. In order to monitor weather pattern/ significant developments during Monsoon Season, 4x coordination conferences of all relevant stakeholders were organized in NDMA. These conferences assisted in better coordination leading to effective decision making and issuance of key instructions to relevant stakeholders.
- g. **Timely Clearance of Landslides**. A total of 23 landslide events occurred during the Monsoon 2021 mainly confined to GB and KP. Due to continuous monitoring, timely coordination and a well-integrated response by NDMA, NHA, Pakistan Army, FWO and concerned Provincial and District Administration, all landslides along important arteries were cleared well in time.
- h. **Restoration of Storm Water Drains in Karachi**. Karachi Transformation Plan (KTP) which was instituted in the aftermath of Karachi urban flooding

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of 2020, continued on three major nullahs in Karachi. Work on Mehmoodabad Nullah has been completed in record time, whereas, execution work on Gujjar and Orangi Nullahs is going on at fast pace. KTP once implemented will give well-needed respite to the populace of Karachi metropolitan.

7. **Lessons Learnt from Monsoon-2021**. Certain gaps were observed during management of floods and associated disasters during Monsoon-2021. These missing links have been kept in focus to develop a corresponding response for Monsoon-2022:-
- a. **Non- Adaptation of Standardized Situation Report (SITREP) Format**. In order to compile accurate data, analyse, plan and assist quick decision making, NDMA issued a well deliberated and comprehensive SITREP format. However, the efforts did not yield desired results as stakeholders did not follow given format for reporting.
 - b. **Provision of Flood Fighting Equipment**. All PDMA's are required to provide certain number of flood fighting equipment to Pakistan Army Engineers before commencement of Monsoon 2022, forming the backbone of rescue efforts. However, the same remained wanting.
 - c. **Stocking of Essential Items**. All PDMA's/SDMA/GBDMA's should take proactive measure in developing stocks of essential items in the areas which are likely to be cut off in case of landslides, avalanches, flash floods and unprecedented precipitations.
 - d. **Lack of Preparation to Deal with Urban Flooding**. Unplanned development, inadequate town planning, and non-conformity to risk assessments coupled with choked waterways and poor drainage is a perfect case for urban flooding in case of intense rains. Moreover, non-availability of adequate resources like de-watering pumps, and lack of training of operators also contributes towards worsening of situation.
 - e. **Ad-hoc Functioning of District Disaster Management Authorities**. In most of the provinces, dedicated human resource has not been posted in DDMA's. The gap at this critical tier of response causes an immediate pull on National resources especially the Armed Forces. This significant

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limitation leads to weakening of DDMA as a crucial tier of disaster response in the process.

- f. **Encroachment in River Plains/ Sewage Channels of Major Cities.** Permanent settlements and encroachments in the river flood plains and sewage channels of major cities is a constant challenge for rescue and relief efforts, besides enhancing the threat levels.
- g. **De-silting of Nullahs.** Encroachment and blockage of nullahs/ drains pose a serious threat of urban flooding. It is important that all PDMA/GBDMAs/SDMA and ICT Administration pay special attention to cleanliness, removal of encroachments and complete the desilting process before the onset of Monsoon.
- h. **Enactment/ implementation of River Act.** Though below average monsoon rainfall did not create any riverine flooding; however, enactment of River Act is the need of the hour. Punjab and KP have enacted the said Act, however other provinces and federating units need to do the same in respective areas in order to avert losses to life and property in case of any riverine floods.
- i. **Lack of Resources.** Non-availability of electricity backup system / generators for clean water supply, sewage disposal system and shortage of fuel for pumping stations in urban areas accentuated urban flooding impacts.
- j. **Dumping of Solid Waste.** Dumping of solid waste and building material on banks of various nullahs posed a continuous threat of Urban Flooding. Furthermore, lack of periodical cleaning / de-silting of rivers / nullahs / tributaries / sewage channels aggravated the urban flooding situation in major metropolis.
- k. **Positioning/ Forward Placement of Resources.** Timely placement of resources and machinery like snow clearance and earth moving machinery at critical choke points and at-risk areas especially in the difficult terrain must be ensured. Non- availability of such equipment at a vulnerable location often leads to exaggerated emergency/disaster like situation.

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Aim

8. To formulate National Response Contingency Plan for all relevant stakeholders for an effective response against the Monsoon-2022 and related emergencies.

Scope

9. The Plan shall encompass following: -

a. **Part I – General Aspects**

- (1) Responsibility Matrix for Flood Management.
- (2) Structural Challenges in Response Mechanism.

b. **Part II - Flood Threat and Vulnerabilities**

- (1) PMD's Monsoon Outlook 2022.
- (2) Perceived Impacts of Monsoon Outlook 2022.
- (3) Major Conclusions from Monsoon Outlook 2022.
- (4) Monsoon-2022 Contingencies.
- (5) Provincial/ District Flood Hazards and Vulnerability Maps.
- (6) FFD Flood Routing Map (Lag time).

c. **Part III - National Response Guidelines for Monsoon-2022**

- (1) Preparedness Phase.
- (2) Early Warning.
- (3) Response - Rescue, Relief & Early Recovery Phase
- (4) Coordination Aspects.

d. **Part IV – Response Guidelines for Drought**

- (1) National Response Guidelines against Drought.

Part I – General Aspects

Responsibility Matrix for Flood Management

10. Responsibility matrix lays down the sequence of actions by various stakeholders in line with their tasks and functions for flood management. The activities under the contingency plan trigger as soon as early warnings / alerts are issued by PMD and FFC based on the weather forecast notified by the PMD through daily press releases. Roles and responsibilities of all relevant stakeholders have been clearly laid down in the contingency plan. Table-2 represents the sequence of actions by different stakeholders and the overall paradigm of responsibility matrix.

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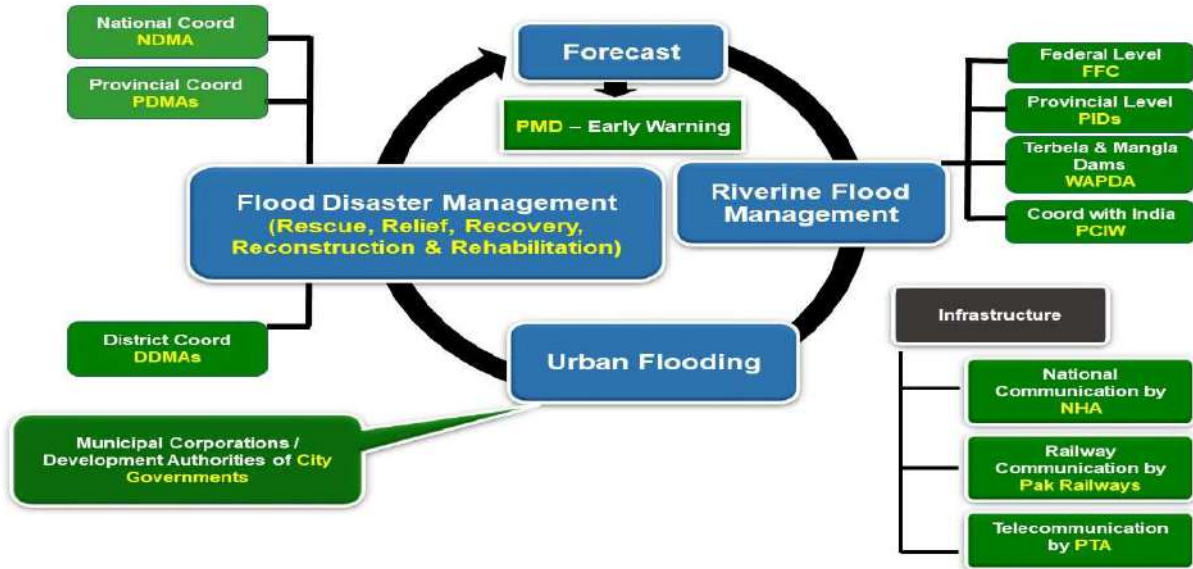


Table-2 – Responsibility Matrix for Flood Management

11. To deal with the challenges of flood management, the responsibility matrix of national and provincial departments is as under: -

a. **Weather and Flood Forecast**

- (1) **Pakistan Meteorological Department (PMD)**. Weather forecast.
- (2) **Flood Forecasting Division (FFD) of PMD**. Flood forecast.

b. **Flood Management & Fighting**. Flood management means regulation of flood through dams, hydraulic structures, flood canals and flood protection works including flood fighting against accidental breaches. The broad responsibilities are: -

- (1) **Riverine Flood / Flash Flood / GLOF**
 - (a) **Federal Flood Commission (FFC)**. National coordination/ flood protection works.
 - (b) **Provincial Irrigation Departments (PIDs)**. Provincial coordination.
- (2) **Municipal Corporations / City Development Authorities / Local Governments**. Urban flooding.

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- (3) **Water and Power Development Authority (WAPDA)**. Effective and timely management of Dams.
- (4) **National Transmission and Dispatch Company (NTDC)**. Management of transmission lines.
- c. **Flood Management (Rescue, Relief, Recovery, Reconstruction & Rehabilitation)**. Covering pre, during & post flood activities as following: -
 - (1) **NDMA**. National level coordination and response.
 - (2) **PDMA / SDMA / GBDMA / ICT DM Cell**. Provincial / regional level coordination and response.
 - (3) **District Governments/Administrations/ CDA (ICT)**. District level coordination and response.
 - (4) **Pakistan Armed Forces/ Civil Defence/ Rescue 1122 and other humanitarian response agencies**. Emergency response in support of national / provincial efforts.
- d. **Pakistan Commission for Indus Water (PCIW)**. Coordination and timely provision of flood discharge data from India.
- e. **Pakistan Telecommunication Authority (PTA)**. Maintenance / restoration of telecom infrastructure and transmission of SMS alerts for communities.
- f. **National Highway Authority (NHA)**. Maintenance / restoration of National road infrastructure.
- g. **Communication and Works Departments of Provinces / Azad Jammu & Kashmir (AJ&K) / GB**. Maintenance / restoration of respective provincial and rural access road infrastructure.
- h. **Pakistan Railways**. Maintenance / restoration of railways communication infrastructure and maintenance of relevant breaching sections.
- i. **SUPARCO**. Pre, during and post-flood overall situation and damage assessment using satellite technology.

Structural Challenges in Response Mechanism

12. Critical limitations in current response mechanism against flood hazards are to be kept in sight by all the stakeholders while planning and preparing respective flood response plans: -

- a. **Meteorological Predictions and Flood Forecasting System.** Prediction capability of medium to long range forecasting is only applicable for 7-15 days, whereas seasonal weather prediction has 65-70% accuracy levels. There is non-availability of telemetry / early warning system for flash floods in hill torrents of South Punjab, KP, Balochistan, AJ&K and GB which impacts on early warning / response time for communities.
- b. **Inadequate Capacity to deal with Urban Flooding.** Intense rain coupled with encroachment in drainage system may lead to urban flooding in major cities especially Karachi, Lahore, Rawalpindi, Peshawar, Hyderabad etc. Inadequate land-use planning, unplanned expansions, inadequate capacity like shortage of high-powered de-watering pumps and inefficient drainage / water disposal system add to the challenges of urban flooding. Pre-Monsoon removal of encroachments and desilting of nullahs / drains needs urgent attention. Such encroachments and blockage of sewerage drains and nullahs pose a serious threat of urban flooding in future as well.
- c. **Non-Availability of Dedicated Aviation Assets for DM.** Aviation assets of Armed Forces and Ministry of Interior are employed for rescue and relief efforts as helicopters of Pakistan Navy and Pakistan Air Force are normally not employed in northern areas. Aviation assets of Pakistan Army are extensively employed in security operations as well and therefore, these limitations have pronounced bearing on initiation of timely disaster rescue and relief activities.
- d. **Non-Availability of Heavy Earth Moving Machinery.** Non-availability of sufficient number of heavy earth moving machinery remains a hindrance in hilly / mountainous regions of the GB, KP, Balochistan & AJ&K. The challenge gets more compounded during bad weather conditions involving long distance movements.

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- e. **Encroachments in River Plains.** Permanent settlements and encroachments in the river flood plains and drainage system of major cities is a constant challenge for rescue and relief efforts during Monsoon emergencies.
- f. **Enactment of River Act.** After 18th amendment, river management falls under the jurisdiction of provinces. Punjab and KP have already enacted River Act, whereas, enactment of the same is under deliberation in other federating units. FFC being responsible for the subject has been directed to get the Federal Rivers Act passed at priority.
- g. **Social and Cultural Norms Inhibiting Disaster Response.** Local residents generally resist evacuations till the very last moment and demand relief on site instead of at planned relief camps which increases quantum of rescue and relief efforts.
- h. **Risk Assessment/ Multi Hazard Vulnerability Risk Assessment (MHVRA).** There is a dire need to undertake a detailed hazard and risk assessment for preparing hazard atlas of Pakistan. Duplication of effort needs to be avoided at National and Provincial levels while undertaking risk assessment exercise.
- i. **Standardized Emergency Response Services.** Though establishment of Rescue 1122 has proven its utility in provision of timely emergency services and DM; however, there is a need to standardize response services elements like equipment, mobility and training curriculum across the country. Revitalization of emergency services can substantially add to DM capacity of the provinces.

Part II – Flood Threat and Vulnerabilities

PMD's Monsoon Outlook 2022

13. During the Monsoon season (July-September 2022), the El Nino-Southern Oscillation (ENSO) neutral condition is expected to prevail while the Indian Ocean Dipole (IOD) condition will remain in negative phase throughout the season. Based on the global and regional circulation patterns, Seasonal Monsoon Outlook is as under: -

- a. Overall, a tendency for Normal to Above Normal precipitation is expected in the country.
- b. Above normal rainfall is expected during July and August especially over Northern Punjab, AJ&K and the adjoining areas of KP.
- c. During September, the lower half, mostly the coastal areas of Sindh and Balochistan may receive slightly above normal rainfall.
- d. Below normal rainfall is expected in GB and Northern KP.
- e. Average normal rainfall of Pakistan during Jul – Sep is 140.8 mm.

Note: Keeping in view the rapid changes in climate system dynamics, above outlook will be updated on monthly basis during first week of each month – PMD

Perceived Impacts of Monsoon Outlook 2022

14. Under the influence of predicted climatic conditions the following impacts have been envisioned: -

- a. Flash flooding and hill torrents in hilly / mountainous areas of Punjab, KP and Balochistan.
- b. Urban flooding in major metropolis of Punjab, Sindh and KP cannot be ruled out.
- c. Extreme hydro-meteorological events over catchment areas are likely to generate riverine floods in major rivers and upstream reservoirs.
- d. Above normal temperatures in high altitudes are likely to increase rate of snowmelt, thereby, increasing the chances of increased base water flow in the Upper Indus River-basin and GLOF events.

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- e. Increased rainfall in water stressed areas of South Punjab, Balochistan and Sindh may help alleviate drought-like conditions. However, low-lying areas of Balochistan & Sindh need to cater for water ponding.
- f. Sufficient water availability for irrigation and power sector will have good impact.
- g. Due to above normal rainfall in the catchment areas of Eastern rivers release of water from across the border is expected more frequently.
- h. Availability of water will be sufficient in Dams for irrigation and power sector.

Major Conclusions from Monsoon Outlook 2022

15. Considering PMD's outlook for Monsoon-2022, impediments of existing response mechanism, past experiences and predominant factor of global climate change, following has been concluded: -

- a. Normal to above normal rainfall with seasonal high humidity and occasional heatwaves is likely in most parts of the country during the period.
- b. High temperatures creating snowmelt coupled with probability of heavy localized rains may generate flash floods in mountainous areas of KP, AJ&K and GB leading to landslides, besides flash floods and hill torrents in D.G. Khan and Rajanpur areas in Punjab.
- c. Flooding in nullahs flowing in North-East of Punjab may cause urban flooding in nearby metropolis.
- d. Due to erratic behaviour of Monsoon, extreme rainfall events like torrential rains, cloudbursts, landslides, GLOF may render vulnerable areas isolated resulting into shortage of basic commodities i.e. food stuff and medicines etc. This entails strategic placing of earth moving machinery along with food stocks, medicines and POL in such areas.
- e. Cumulative effect of riverine, flash and urban floods in areas vulnerable to all three flood hazards cannot be ruled out. Hence, the need to configure correct response in such regions / areas becomes imperative.
- f. Possibility of extreme weather events in catchment areas of eastern rivers vis-à-vis identified limitations of own hydro-meteorological forecasting

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capability may limit early warning time, hence, need to have sound safeguards for flood management. In addition, Pakistan Commissioner for Indus Water (PCIW) should update timely information of eastern rivers to all the concerned authorities.

- g. Effective management of dams, reservoirs and irrigation systems will be vital to ensure water flows remain de-synchronised.
- h. Timely de-silting and clearance of stormwater drains, nullahs and sewage channels needs to be ensured in order to mitigate the effects of urban flooding.
- i. Timely issuance of qualitative weather forecasts / alerts by PMD and PCIW will be essential in order to ensure effective early warning to at-risk / affected areas.
- j. Relevant stakeholders must ensure that essential response equipment and relief goods are strategically preplaced in order to minimise response time.
- k. All stakeholders to conduct mock / table-top exercises to practise coordination and response mechanisms.

Monsoon-2022 Contingencies

16. **Common Possibility**. Collective effects of Monsoon rains, unprecedented heat wave, hydrological discharge of glacier melt, mismanagement of major water reservoirs, and indifferent regulation of eastern rivers water and choking of sewerage channels in major cities can result into low level riverine flood, flash flood in hill torrents, landslides, avalanches, GLOF in areas vulnerable to such hazards, while causing urban flooding in metropolis.

17. **Visualized Contingency Scenarios**. Monsoon visualised contingency scenarios derived from PMD's Outlook for Monsoon-2022 are as under: -

- a. **Scenario-1 (Most Likely) – Normal to Above Normal**. Normal to above normal Monsoon is generally considered to be average quantity of precipitation over all the geographical locations under its influence and over the entire expected time period. It may unfold as under:-

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- (1) Variable intensity from Normal (Northern Punjab, KP and AJ&K) to slightly below normal (GB).
 - (2) The Monsoon pattern is likely to remain normal to above normal from July – September. Monsoon may be evenly spread or intense in one period while less intense in remaining period.
 - (3) Common possibility (Urban flooding, landslide, avalanches, flash floods, GLOF) emerges in a respective manner.
 - (4) Heavier rainfall in hilly / mountainous areas of the country may lead to flash floods and landslides. Landslides may cut-off road access to areas of KP, GB and AJ&K.
 - (5) Occasional heavy downpours/ extreme events in major metropolis may generate urban flooding.
 - (6) Occasional heatwaves may occur at plain areas and metropolises during the 1st half of season and drought intensity may be aggravated in Western Balochistan.
 - (7) Heavy flows in River Chenab may lead to flooding in related Nullahs Aik, Deg & Palku, Nandipur and Marala-Ravi Link Canals.
 - (8) Higher temperatures may lead to increased glacial melt and risk of GLOF in mountainous areas of KP, GB and floods in Upper Indus Basin.
 - (9) The combination of glacial melt, torrential rainfall in catchment areas and above normal rainfall in Upper KP may lead to earlier filling of Tarbela Dam.
 - (10) Rain in catchment areas of Kashmir would lead to excessive water in Mangla.
- b. **Scenario- 2 (Likely) – Below Normal to Normal.** Normal Monsoon is generally considered to be average quantity of precipitation over all the geographical locations under its influence and over the entire expected time period. It may unfold as under:
- (1) Normal to slightly above normal Monsoon will prevail all over Pakistan including States and Regions.

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- (2) Variable intensity from Normal (Northern Punjab, KP and AJ&K) to slightly above normal (GB & Western part of KP) while deficient rainfall is expected in arid zone of Punjab, Sindh and Balochistan.
 - (3) The Monsoon pattern is likely to remain normal from July – September. Monsoon may be evenly spread or intense in one period while less intense in remaining period.
 - (4) Common possibility (cloudburst, hailstorm, high winds, urban flooding, landslide, avalanches, flash floods & GLOF) emerges in respective manner.
- c. **Scenario-3 (Probable) – Intense Monsoon**. This probable scenario may consist of events where-in very heavy downpours coupled with higher temperatures, unpredictable release of water from Reservoirs in Indian illegally occupied Kashmir along with forced release of water from Tarbela and Mangla Dams. It may unfold as below: -
- (1) Extraordinary flood conditions triggered by extreme events.
 - (2) High water storage level in major reservoirs.
 - (3) Urban flooding due to heavy downpours in short time-span.
 - (4) Peak flood conditions may exist particularly in eastern rivers affecting areas of Punjab and Sindh.
 - (5) Increased cyclonic activity in Arabian Sea may compliment Monsoon.
 - (6) Common possibility (Urban flooding, landslides, flash floods & GLOF) emerges as a phenomenon in cities / regions prone to such hazards.
- d. **Scenario- 4 (Less Probable) – Erratic Monsoon**. Due to the effects of climate change on Monsoon system, erratic rainfall patterns in combination with increased temperatures may lead to sporadic and isolated heavy to very heavy downpours, heatwaves and increased effects of drought-like conditions. Overall rainfall to remain below normal. It may unfold as below:-

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- (1) Occasional heavy downpours to occur in Lahore, Gujranwala and Rawalpindi Divisions which may lead to urban flooding and overflow of irrigation channels.
- (2) Higher temperatures lead to increased glacial melt resulting in increased river flows into Tarbela Dam.
- (3) Heatwaves to occur in plain areas and heavily urbanised areas of the country.
- (4) Duration may spill over beyond September.
- (5) High temperatures to increase water requirement of kharif crops.
- (6) Peak flood conditions may exist particularly in western rivers affecting areas of Punjab and Sindh.
- (7) Intensity of drought-like conditions to increase in areas already affected areas / at-risk areas, i.e. West Balochistan.

e. **Scenario-5 (Most Dangerous) – Abnormal Monsoon**

- (1) Two systems coming from West and East, collide causing heavy downpour and a situation similar to Super Floods 2010.
- (2) Combination of Scenario 1, 2, 3, 4 and 5.
- (3) Extraordinary flood conditions triggered by some extreme events.
- (4) High water levels in major water reservoirs.
- (5) Common possibility (Flash floods, Riverine Floods, Urban flooding, landslides, avalanches, & GLOF) emerges as a more frequent and recurrent phenomena to a high degree in cities / regions prone to such hazards.

Provincial/ District Flood Hazards and Vulnerability Maps

18. Provincial / district hazard and vulnerability maps are essential part of preparedness. These maps are created on the basis of historical data of affected areas, extent of damage, population density and housing units. It indicates different hazard zones (Very High, High, Medium, Low and Very Low) that have been identified after the

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analysis, showing the level of hazard in an area. Monsoon hazard maps of provinces / regions are attached as **Annex B – F**.

FFD Flood Routing Map (Lag time)

19. FFD revised Flood Lag Times on the basis of 30 years data from 1990 – 2020 and changed morphology for improvement of the national flood management system. Flood routing model is attached as **Annex G**.

Part III – National Response Guidelines for Monsoon-2022

20. National and provincial response guidelines for the Monsoon contingency scenarios are as per the Monsoon Outlook 2022 generated by PMD, comprising different phases, which are covered in following paragraphs.

Preparedness Phase

21. **Major Actions before Monsoon**. Following measures are likely to infuse refinement in response mechanism: -

- a. **Resource Mapping**. Resource mapping of respective regions and its timely intimation to NDMA.
- b. **Placement of Earth Moving Machinery**. Placement of earth moving machinery in vulnerable mountainous districts of AJ&K, GB & KP for timely clearance of roads / landslides.
- c. **Special Conferences**. Special conferences by relevant stakeholders on occurrence of any extreme events will assist timely decision-making process.
- d. **Provision of Timely Information**. PDMA's to ensure timely provision of information regarding incidents and response. PDMA's to make use of NDMA's standardized SITREP format, which is attached as **Annex H**. Moreover, mechanism of incident reporting has to be made more efficient and timely.
- e. **Updation of Database**. DDMA's to update miscellaneous data which may be needed during disaster response, e.g., database of volunteers, miscellaneous resources etc.

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- f. **Innovative Use of Modern Technology**. DDMA's and communities should be encouraged for innovative use of modern technology and gadgets for disaster response.
- g. **Awareness Campaign**. Launching of awareness campaign through electronic, print and social media to be undertaken to enhance awareness of the community.

22. **Measures against Riverine and Urban Flooding**. Following protective measures based on past experiences will help to mitigate disaster / losses: -

- a. Identification of low-lying areas prone to pondage / inundation in congested areas of metropolis.
- b. Preparation of hazard maps of major cities against urban flooding based on recorded history for sensitization, awareness, early warning and evacuation of vulnerable communities.
- c. Capacity building of Municipal Corporations with priority to Municipal Corporations of mega cities. Attention must be given to availability of requisite number of heavy-duty de-watering pumps and generators at most vulnerable areas of city centres.
- d. Widening, dredging and de-silting of water / sewerage drains.
- e. Removal of encroachments along the flood plains and sewerage drains, thus reclaiming original extents of such drains.
- f. Serviceability and operability of pumping stations.
- g. Provision of backup electricity arrangements in the form of generators for sewage disposal / pumping stations.
- h. Establishment of committee for planning and implementation of contingency plans at municipal level especially in cities like Karachi, Lahore and Rawalpindi.
- i. Identification of likely evacuation sites and relief camps.

23. **Measures against Flash Flood**. In the past, majority of losses occurred due to flash flooding in Monsoon 2016, 2017, 2018, 2019 and 2020. Following protective measures based on past experiences will help in mitigating losses from flash floods: -

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- a. Awareness drive of recorded flash flood history in regions prone to such hazards.
- b. Signposting of waterways in local language with known flash flood history. It should clearly demarcate threat level of waterways thereby sensitizing the public.
- c. Long term planning for relocation and rehabilitation of population living under threat of flash floods.
- d. Special community based vigilance to be exercised during dark hours and periods of intense rains by using sirens or announcement on loud speakers of mosques.
- e. Giving priority to commissioning of emergency services like Rescue-1122 in inaccessible mountainous areas. As an interim measure, forward displacement of emergency services and relief stores may be planned.

24. **Measures against GLOF**

- a. **Civil Engineering Interventions**. To prevent the lake outburst, following civil engineering interventions may be considered: -
 - (1) Prevent over topping of the lake water and strengthen moraine dam by concrete cementing, gabion wall etc.
 - (2) Keep volume of stored water in the lake to a safe level; initially by dropping the level and then by excavating a tunnel or deepening the breach of the moraine-dam to retain the lower level through any one of the following: -
 - (a) Siphon system.
 - (b) Electrical pumping.
 - (c) Controlled blasting of the moraine-dam.
- b. **Other Interventions**. GLOF carries huge potential energy after its occurrence and thus its impact will always be challenging to manage. Some of the mitigation measures against GLOF, downstream of a glacier lake, without direct engineering intervention to the lake itself are enumerated

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below. The mode is not aimed to prevent the lake outburst but to mitigate the GLOF hazards: -

- (1) Preparation of a hazard map.
- (2) In order to predict and understand GLOF on its occurrence, evaluation of possible hydrograph along water channel downstream.
- (3) Placing of round the clock monitoring and early warning system at identified GLOF sites.
- (4) Construction of adequate trapping dams with capacity to dissipate the GLOF impact.
- (5) Strengthening infrastructures to make these robust enough to resist GLOF destruction.
- (6) Measures to timely disseminate information to the vulnerable populace.
- (7) Rehearsal / contingency planning to shift vulnerable communities to safer places.

25. **Measures against Landslides / Avalanches**. Threat of landslides/ avalanches in vulnerable areas underscores outlook of impending Monsoon-2021. It merits reappraisal of basic precautionary measures such as: -

- a. Refresh recorded history of landslides / avalanches prone areas. Besides vulnerability risk assessment; personal experience of notables of such areas can also prove beneficial.
- b. Local communities of vulnerable areas be sensitised to pay special attention to weather forecasts / alerts as heavy rains can trigger landslides / avalanches. Sudden temperature variability has the potency to trigger avalanches in vulnerable areas.
- c. Community based early warning system as part of response mechanism be instituted in landslide / avalanche prone areas by nominating local notables to ensure that alerts are timely disseminated. Measures may include use of watchmen, loudspeakers/ megaphones, loudspeakers of

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Mosques, whistles, SMS alerts, telephone and any other arrangements of similar nature.

- d. Based on landslide / avalanche alerts issued by PMD, local administration may consider precautionary closure of roads/ tracks to avalanche/ landslide prone areas and evacuation to safer places as a contingency planning.

26. **Measures against Cyclones**. Although the Cyclones Season is over; however, owing to changes in temperature, the possibility of such events cannot be completely ruled out. Therefore, following guidelines can help/ protect people in vulnerable areas:-

a. **Actions before Cyclone Advisory**

- (1) Surroundings of houses should be clear of any long hanging tree branches, large bushes and loose debris / waste i.e. garbage, lawn chairs / tables, potted plants etc., which can become airborne and cause injury / damage.
- (2) List of local emergency services contact numbers be maintained at all times.
- (3) An emergency kit may be prepared which shall include adequate food stuffs and drinking water etc.
- (4) Tune into your local television or radio station to keep abreast with the developing situation.
- (5) Removal of billboards.

b. **Actions after Cyclone Warning**

- (1) Vehicles be parked under a solid shelter.
- (2) Close windows and shutters or place plastic sheeting on all windows around houses.
- (3) Remain indoor and tuned into your local television or radio stations for up-to-date information.
- (4) Turn off main electrical power, gas & water supplies before evacuation.
- (5) Evacuate to nearest safe zone or high ground.

c. **Actions When Cyclone Strikes**

- (1) Stay indoors and away from windows.

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- (2) If your home starts to break apart, protect yourself under mattresses, carpets / rugs, blankets or under a strong table.
- (3) Beware that if the wind drops, don't assume that cyclone is over, you may be in the "Eye of the Cyclone", violent winds will soon resume. Wait for the official all clear from emergency services / district administration.
- (4) Check your home for any gas / water leaks.
- (5) Do not use electrical appliances if your home is flooded or if you are wet.
- (6) Beware of damaged power lines, bridges, buildings, trees and don't enter flood water.

Early Warning Phase

27. **Early Warning by Government Agencies.** PMD will be the focal organization for providing flood early warning. No other agency is allowed to issue any forecast on weather / flood. Only PMD's alert will be relayed by stakeholders: -

- a. FFD, subordinate department of PMD will disseminate Daily Flood Forecasts during the Monsoon season.
- b. Weather and flood forecast / advisory will be issued as per following schedule: -
 - (1) **Normal Conditions**
 - (a) Monthly - First week of the month.
 - (b) Weekly - Every Monday.
 - (2) **Onset of Floods**
 - (a) Normal - Every 24 hours.
 - (b) High / Very High - 6 hours.
 - (c) Significant Event - Every hour.
 - (d) Extreme Event - Minimum permissible time before occurrence.
- c. Specific weather advisory/ warning/ flood alerts will be issued by respective PDMA's to disseminate warning to district authorities / relevant

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stakeholders via **Fax/ Email/ Telephone/ SMS/ WhatsApp Message/ Twitter** and immediately upload on their website.

- d. NDMA and PMD will also release breaking caption / news or tickers to TV stations including the national TV station. Moreover, PMD has also constructed a fully-equipped studio for TV broadcast in its own building. Radio broadcasts will also be used from national and FM radio stations to keep the public aware of any upcoming disaster and related advisories.
- e. PMD will nominate a focal person authorized to deal with weather and flood forecast which will be notified to all concerned and will be readily available to all stakeholders, when required.
- f. PMD will also critically analyse contributing factors for drought in arid zone of the country and timely intimate the same to NDMA and other relevant stakeholders.

28. **Community Early Warning through Advisories**

- a. Public Service Messages (PSMs) through print / electronic media must be generated forthwith by PDMA / SDMA / GBDMA / DDMA.
- b. Bill-boards, posters, banners, brochures, warning signs, and flood-water levels may be used to educate / warn people of at-risk areas.
- c. All concerned departments and local communities must be apprised about the forecast and it's likely unfolding at the onset of Monsoon.
- d. Community must be informed about safer places, relief camps and evacuation plans by concerned departments.
- e. To ward off "**False Warning**", all Disaster Management Authorities will ensure implementation of Clause 35 of NDM Act 2010.
- f. Community based indigenous early warning system must be institutionalized as part of response mechanism in areas vulnerable to flash floods, landslides, GLOF and avalanches by following means:-
 - (1) Placing of round the clock lookouts especially at night or during the period of intense rain.
 - (2) Use of sirens or announcements on loud speakers of mosques.

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- (3) Lightening of fire and drum beating by the people living at higher places in such areas.
- (4) Practicing of evacuation drills.
- g. Issuance of SMS Alerts through PTA in only the affected & threatened areas using GIS fencing.

Response – Rescue, Relief and Early Recovery Phases

29. **Tiers of Response**. The national contingency response plan have been evolved keeping in mind the structural challenges in response mechanism and experiences of past floods. National sphere of Monsoon response will comprise of following tiers: -

- a. **1st Tier**. Local emergency response by DDMA's with the support of district / provincial / Armed Forces resources.
- b. **2nd Tier**. Provincial effort in support of district authorities.
- c. **3rd Tier**. NDMA response (national efforts / national resources) in support of Province (s), GB, AJ&K and ICT with / without external assistance.

30. **Disaster Management (DM) Planning**

- a. PDMA's to ensure resource mapping of volunteers (Civil Defence, Pakistan Red Crescent Society (PRCS), Boy Scouts, Girl Guides), UN Agencies, NGOs / INGOs and ambulances at district level.
- b. Coordination must be carried out with Civil Defence, PRCS, Pakistan Boy Scouts Association and Pakistan Girl Guides Association at district level to provide support at various relief camps under the overall guidance and supervision of the district administration.
- c. Location of relief camps must be earmarked and necessary administrative arrangements be made accordingly. It must be incorporated on past experiences and should be need based. Relief camps should be accessible / closer to main arteries so that relief goods are easily delivered to the affected people.
- d. Fool proof measures be planned against rains / flash floods in relief camps established for Temporarily Displaced Persons (TDPs).
- e. Resource Mapping and prepositioning of dedicated earth moving machinery at landslide / flood water erosion prone highways / link roads

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and isolated mountainous areas of KP, AJ&K and GB by respective Governments. NHA, respective Communication and Works Departments and other relevant organizations to ensure such arrangements alongside Bailey Bridges and enhanced number of maintenance teams at all critical sections especially following: -

- (1) Fatehpur to Kalam (N-95) Road.
 - (2) Karakoram Highway (KKH).
 - (3) Balakot to Jalkhad to Chilas (N-15) Road.
 - (4) N-5 Road.
 - (5) Kohala to Muzaffarabad (S-2) Road.
 - (6) Abbottabad to Murree Road in Galiyat.
 - (7) Islamabad to Murree to Kohala (N-75) Road.
 - (8) Gilgit – Skardu (S-1) Road.
 - (9) Muzaffarabad to Chakothei (S-3) Road.
 - (10) Sukkur to Jacobabad to Dera Allah Yar (N-65) Road.
 - (11) D.I. Khan to Mughalkot (N-50) Road.
 - (12) Muzaffargarh to D.G. Khan to Sakhi Sarwar (N-17) Road.
 - (13) Dir to Chitral (N-45) Road.
 - (14) Khawazakhela to Besham (N-90) Road.
- f. Flood Contingency Plans be updated by all concerned based on NDMA's National Monsoon Contingency Plan 2022 as well as respective SOPs of planning process. The same be shared with NDMA and relevant stakeholders immediately.
- g. To identify most vulnerable communities for sensitization, awareness, early warning and evacuation in emergency, district hazard maps must be updated down to the union council level by focusing on the following points:-
- (1) **Riverine Floods**. Settlements (encroachments) inside river plains (kacha area), communities living close to river banks / vulnerable sections identified by respective irrigation departments.
 - (2) **Flash Floods**. Settlements closer to / inside water courses.

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- (3) **Landslides / Avalanches / GLOF**. Communities residing near dangerous slopes / potential landslide areas in mountainous regions.
- (4) **Urban Flooding**. Low lying areas prone to inundation in congested city centres.
- h. Planning for the needs and concerns of vulnerable groups be made on the basis of available authenticated gender, age and disabled disaggregated data at district level.

31. **Flood Protection Works**

- a. Joint inspection of all flood protection works, embankments and bunds including all vulnerable points and structures be carried out with requisite marking at all bridges / structures embankments.
- b. Damaged bunds be repaired and shortage of pitching store reserves be recouped, pre-positioned at a safer place. Repair and maintenance of left over flood protection works should be completed by 15 June 2022.
- c. Round the clock vigilance of vulnerable sections of flood protection structures / bunds, identified by respective irrigation departments will be ensured through irrigation staff, police, civil defence and local community volunteers. Incomplete flood protection works, if any, will be particularly kept under special watch by respective PIDs / PDMA's / DDMA's.
- d. SOP on breaching of bunds must be rehearsed / practiced in presence of all stakeholders. Breaching sections be kept well demarcated, necessary explosives be kept ready for which close liaison be made amongst all stakeholders.
- e. During the flood season, critical bridges be kept under special focus and may be patrolled. Detailed inspection of all the bridges, especially the flood openings should be carried out in order to ensure that chocked waterways have been cleared.
- f. Addresses and telephone numbers of the controlling authorities / departments having earth moving machinery should be kept readily available. Besides, a liaison with all the departments / agencies possessing

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such machinery should be made well in advance so that their machinery could be obtained on a short notice during emergency.

- g. Adequate number of shallow type spans and pitching stores should be kept readily available by Pakistan Railway at an appropriate place for use in case of emergency.

32. **Flood Rescue Measures**

- a. Availability and serviceability of flood rescue equipment (Boats, OBMs etc) will be ensured by all concerned. The equipment will be strategically placed so as to respond to flood contingencies in different regions.
- b. Availability of trained OBM operators must be coordinated and ensured during entire Monsoon season.
- c. Readiness of Urban Search and Rescue (USAR) teams will be ensured for rescue operations in collapsed buildings / landslides in respective province or other provinces (when requisitioned).
- d. Employment of Pakistan Army USAR team will also be coordinated through NDMA.
- e. Demand of Pakistan Army for flood fighting equipment has already been rationalized. PDMA's to ensure provision of rationalized flood fighting equipment demand of Pakistan Army before onset of Monsoon-2022. A mechanism be mutually devised by all PDMA's and Pakistan Army for its collection / utilization and maintenance as per requirement.
- f. Availability of staff of all relevant departments especially hospitals and other emergency services on holidays must be ensured during Monsoon.
- g. Rescue 1122, emergency services, civil defence, volunteers and police / law enforcement agencies will be incorporated during rescue operations.
- h. Aviation effort should be requisitioned through NDMA by respective Provincial Governments and AJ&K. Expenditures will be borne by respective province / region.

33. **Dam Operations**. There must be an intimate coordination as per revised instructions / SOPs of dam management with all stakeholders so that response is generated well in time. Coordination conferences must be held before 15 June 2022.

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Effective coordination must be done amongst members of Flood Management Committee (FMC) of Mangla Dam after reservoir level of 1232 feet.

34. **Salient Preventive Measures during Monsoon**

- a. Landslides prone areas, hill torrents, seasonal nullahs and river plains must be identified by local communities with the ability to shift immediately to safer places, in case of emergency.
- b. A bag containing important utility items like first aid medicines, dry ration, water, charged torch, radio set, mobile phone, cells, match box, candles, charged batteries, mosquito repellent/ net, important documents including CNIC and some cash money should always be readily available.
- c. Preventive measures against infectious / skin diseases and cholera etc must be taken and vaccination done at first instance.
- d. Animal vaccination along with arrangements of fodder be kept in sight.

35. **Rescue Operations**

- a. Forced evacuation must be planned in case of limited warning time, by utilising all available resources at provincial / district levels.
- b. DDMA as first responders should mobilize communities for disaster response. This will encourage community involvement, strengthen their own efforts and also address the issue of absence of human resource.
- c. Priority in rescue / evacuation will be given to vulnerable groups (age, disabled, women and children).
- d. NHA and Pakistan railways will restore the communication infrastructure / alternate routes, as early as possible.
- e. SUPARCO will provide satellite imageries and assessment for projected development of floods in affected areas to NDMA.
- f. Traffic arrangements be made for regulating traffic on national and provincial arteries in case of damage to infrastructure by floods.
- g. Disaster tourism must be curbed.

36. **Parameters for Flood Rescue Equipment.** Need based rationalization of the quantity of rescue boats and type of OBMs is to be done based on factors mentioned

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below to configure optimal response against envisaged flood threat with availability of sufficient reserves at required tier of response: -

- a. Respective provinces are responsible for establishing the requirement of boats vis-à-vis threat of flood / vulnerability / exposure / risk assessment. All supporting agencies have to maintain the capability based on the need of the provinces.
- b. Districts must be prioritized as High Threat (Priority-I), Medium Threat (Priority-II) and Low Threat (Priority-III) based on following aspects: -
 - (1) Historical flood data record especially last 20 years flood events.
 - (2) Population density.
 - (3) Urban / rural divide.
 - (4) Type of flood threat i.e. riverine, flash, urban etc.
 - (5) Degree of vulnerability and exposure e.g. population centres in water ways / proximity to rivers.
 - (6) Reaction time.
- c. Standard size of rescue boat will be 19 feet for fibre glass boats.
- d. Maximum number of passengers carried by a fibre glass rescue boat should be 12 persons (5 on either side) and two crew members at the back. While for a M2 Pontoon (2 x boats joined) of Army, it will be 20 persons including two crew members. For a 9 feet pneumatic boat, it will be 8 – 10 persons including crew members.
- e. Response action will have following sequence: -
 - (1) **1st Tier – Immediate Response (Immediate but Not Later than 30-40 Minutes)**. By District Administration through Rescue 1122 (if held), Police or trained Volunteers (if held), Civil Defence.
 - (2) **2nd Tier – Build up Response (Immediate but Not Later than 1-2 Hours)**. By Armed Forces / Civil Armed Forces, when requisitioned. Alongside, PDMAs may shift the resources of respective province from other less threatened districts.
- f. **Positioning of Rescue Boats**. The location of rescue boats will be decided based on following aspects: -

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- (1) Availability of reaction time vis-à-vis flood warning, transportation time to water line and mobilization time of crew.
 - (2) Road communication infrastructure vis-à-vis threat of isolation in case some roads are cut or traffic jams deny transportation in time.
 - (3) Time required for build-up in shifting of resources.
- g. **Priority of Districts**. The priority will be established by respective provinces after due deliberation / consultation and shared with all stakeholders for standardized planning: -
- (1) **Priority – I Districts (High Threat)**. These districts should be historically affected by floods (riverine / flash) and situated alongside rivers, Nullahs and hill torrents with relatively higher number of population.
 - (2) **Priority – II Districts (Medium Threat)**. These are medium priority districts, historically less affected by any type of floods with relatively low number of population.
 - (3) **Priority – III Districts (Low Threat)**. These are low priority districts, historically least affected by any type of flood and with relatively lesser number of population.
- h. **Concept of Employment of Rescue Boats**. The below mentioned concepts are just guidelines, in case of emergency, the rescuers should use their best judgement as per dictates of situation and resources at hand.
- (1) Fibre Glass / M2 boats will not be operated at “Peak flood” currents in the mid-stream of a riverine flood as it may endanger the life of crew and persons being evacuated. In such cases boat operations will be in the peripheral areas where water current may permit boat operations.
 - (2) Boats will not be used in hill torrents with fast currents or shallow water and boulders underneath.
 - (3) Pneumatic boats will be used in relatively shallow water channels with low water currents and aquatic undergrowth.

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- (4) Low power OBM operated boats will be used in urban centres against urban flooding along with oars.
- (5) Mix of low, medium and high powered OBMs will be maintained based on type of area, river and operational dictates.
- (6) During planning for flood rescue operations, the areas for employment of Armed Forces will be earmarked for coordination and clear demarcation of responsibilities / operational orientation. Within Armed Forces, in Sindh Province, the districts must be deputed to Army and Navy.
- (7) The calculation of life jackets will be based on the number of boats @ 12 life jackets per boat. Minimum 20% reserves will be calculated for life jackets.
- (8) PDMAs may maintain their central reserve stock on divisional basis as per requirement / threat assessment to release the same to district administration or Armed Forces.

37. **Relief Operations**. All stakeholders should incorporate NDMA's Guidelines on Multi-Sector Initial Rapid Assessment (MIRA), Minimum Standards of Relief in Camp and Ex-gratia Assistance to the persons affected by natural and man-made disasters, in their respective plans. Moreover, special attention may also be given to following: -

- a. A standardized food pack must be designed as per local requirements to meet the needs of affected persons. Energy biscuits and other such food items which are not part of the daily diet of local community, be avoided. Instead items like rice, wheat bags, ghee and milk for babies etc, should be included.
- b. Water purification tablets and filtration systems for the provision of clean drinking water to affected people must be stocked in advance.
- c. Relief management is the most significant part of response to any disaster. The main purpose of the relief management is to provide life sustaining commodities to the affected communities through a fair and organized system, therefore, distribution method should be decided in consultation with local communities.

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- d. Based on the past experiences, need must be formalized and the list of relief goods should be available with all DDMA's and displayed on websites to facilitate donors to provide need based relief goods in emergency.
- e. Relief packages should be according to the region's cultural context and food requirements be ensured for lactating mothers, pregnant women, infants, children and elderly persons. Stockpiling and contingency planning should incorporate special needs of older persons and persons with disabilities particularly with regards to special equipment such as wheel chairs etc and must be able to cater for the needs of family, as a whole.
- f. Trained community level teams should assist in planning and setting up emergency shelters, distributing relief among the affected people, identifying missing people and addressing needs of education, health care, water supply, sanitation and food etc of the affected community. Relief teams should also engage active women from within the community in distribution of food in the relief camps.
- g. Minimum Initial Service Package (MISP) is an international standard of care which is normally implemented at the onset of every emergency to reduce mortality, morbidity and disability among populations (particularly women and girls) affected by crises. This can be achieved by increasing the provincial and district capacity to implement the MISP during disasters, creating a data bank of trainers and trainings, strengthening the coordination stakeholders for responding in a timely and effective manner.
- h. Emergency preparedness planning within the education sector is a critical step towards ensuring access to quality education for all learners in times of crises. Minimum standards / guidelines on education in emergencies may be put in place to enable continuity of structured learning during disasters.
- i. Dignity of all the affected persons should be especially ensured during all relief phases of rescue/ relief/ early recovery etc.
- j. Disease early warning system to be put in place by provincial health departments, once a situation arises. National Health Emergency Preparedness and Response Network (NHEPRN) should establish liaison

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and necessary coordination with provincial health authorities. District and city administration should prepare for Monsoon season in advance by ensuring that **anti dengue and malaria** drives commence promptly and spraying and removal of stagnant water is done at priority basis. Health authorities must ensure the stockpiling of medicines, vaccines and availability of mosquito nets in all health facilities and are also placed at lowest possible tier for distribution.

- k. The supply chain of relief goods must be maintained and followed in true letter and spirit. DDMA's are the first tier supported by PDMA's to provide immediate relief. Similarly, second tier (PDMA's supported by NDMA) should be ready to render assistance once the stocks of DDMA's are exhausted. Third Tier of NDMA supported by National resources to extend relief support required by the provinces / regions.
 - (1) NDMA maintains its stocks at strategic locations (**Annex I**).
PDMA's are responsible to collect the stocks once released by NDMA from a particular location.
 - (2) NDMA stocks will be requisitioned only in case of extreme emergency and with sufficient reaction time.
 - (3) Distribution of tents at site must be avoided. People must be motivated to come to relief camps.
 - (4) At no point of time would NDMA's stocks placed in mutually shared warehouses to be utilized without prior approval of NDMA.

38. **Relief Goods – Non-Food Items (NFIs)**

- a. Logistics caseloads will be worked out on average relief rendered during flood related hazards for one decade (2011– 2020) in respective districts/ regions / provinces by all PDMA's and ICT DM Cell.
- b. Stockpiling of relief goods (NFIs) on envisaged caseload will be ensured at district level by Provincial/ State/ GB DMA's, forthwith in accordance with "NDMA Guidelines on stocking, maintenance and supply of relief and rescue items".

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- c. An effective mechanism of supply chain management must be established including prequalified suppliers for provision of food items, relief goods (NFIs) and transport contractors for emergency transportation.
- d. Federating Units including AJ&K and GB must ensure stocking of sufficient quantity of wheat and food items before 30 June 2021 in areas vulnerable to floods and isolation, owing to possible severance of road links.
- e. Pakistan Utility Stores Corporation (USC) will forward resource mapping along with inventory of items, contingency plan including capability of mobile utility stores to NDMA, PDMA and all concerned DDMA's by 15 June 2022. USC will further ensure maintenance of sufficient stock levels and supply chain to support community in all flood prone areas especially far flung areas of KP, GB, AJ&K and Balochistan.

39. **Early Recovery/ Damage Assessment**. MIRA is the first step of the Assessment & Monitoring Framework designed to identify strategic humanitarian priorities including scale of a disaster, priority areas of assistance and identify gaps in disaster response after the onset of natural disasters or complex emergencies. NDMA and UNOCHA has developed MIRA with the aim of sharing common procedures and assessment methodology for needs data collection as under: -

- a. In case of need, MIRA module will be deployed for which PDMA's/ DDMA's will be required to provide requisite human resource, trained for the module.
- b. Rapid assessment will be carried out by NDMA / PDMA / UN / INGOs / NGOs to identify needs and priorities of affected and vulnerable communities.
- c. Initial report will be shared with Disaster Management Authorities within one week and final report within two weeks.

40. **Needs & Concerns of Vulnerable Groups**. Following aspects must be kept in special focus during all stages of flood management: -

- a. Relief sites and camps should ensure attention to women's security/ privacy needs like separate wash-rooms with locks, adequate lights, water and sanitation facilities etc.

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- b. Women's fair and equitable access to basic services should be ensured, particularly in health and hygiene.
- c. Female doctors and psychosocial support personnel should be made available for women and children.
- d. Mobile medical units equipped with safe delivery, post-natal facilities and referral should be in place.
- e. Camp management agency should ensure that the registration, profiling and mapping systems record disaggregated data on age, gender and vulnerabilities so as to identify people with specific needs at the earlier stages of entering in the camp site and throughout the duration of camp stay.

Coordination Aspects

41. **Inter Provincial / Regional Coordination**. During management of disasters, inter provincial / regional coordination mechanism can require assistance especially in far flung areas in shortest possible time thus reducing sufferings of distressed population. Information about resources of neighbouring provincial/ regional government resources can be more conveniently incorporated in response phase.

42. **Coordination Spectrum**

- a. All stakeholders will monitor flood situation by activation of Emergency Operation Centres (EOCs). EOCs will be activated by NDMA, P/S/G DMAs, CDA, Pakistan Armed Forces and all relevant stakeholders as per respective SOPs from 15 June to 15 September 2022, unless Monsoon is prolonged.
- b. All stakeholders including Pakistan Armed Forces, FFC, FFD, PMD, NHA, NHEPRN & SUPARCO involved in flood management will nominate respective Liaison Officers (LOs) for National Emergency Operation Centre (NEOC) by 15 June 2022.
- c. Daily coordination conference will be organized by NDMA during a flood situation in NEOC at 1000 hours. All LOs will attend the conference.

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- d. Information about any significant event will be interpreted and shared by PMD with NDMA.
- e. All significant information will be immediately passed to NEOC by respective PDMAs.
- f. Facility of a Cloud Based Video Conference System e.g. Google Meet, Microsoft Team, WebEx & Zoom etc. is available at NDMA. Necessary hardware (Cameras) and Software are held with PDMAs to connect to the NDMA. Same may be utilized for effective communication during Monsoon-2022. Necessary details of the system are as under: -
 - (1) **Point of Contact (POC):** ICT Directorate NDMA.
 - (2) **Alternate Skype ID:** ndmapk.
 - (3) Prior coordination for setting up of video conference besides its testing is required as per SOP.
- g. **Coordination with UN Agencies and INGOs / NGOs**
 - (1) The support of UN Agencies and INGOs / NGOs will be utilised in a coordinated manner, mostly in preparedness, relief, post disaster assessments and rehabilitation phases.
 - (2) The capabilities of each organization must be ascertained to ensure its optimal utilisation.
 - (3) Need based employment of UN Agencies will be regulated by NDMA and PDMAs.
 - (4) NGOs / INGOs duly cleared / approved by concerned ministries will be allowed to assist in relief operations.

43. **Reports and Returns**

- a. Submission of Daily SITREP to NEOC by PDMAs / DDMA, PMD, FFC, FFD and NHA will be ensured as per already issued NDMA SITREP SOP with effect from 15 June 2022 onwards.
- b. NDMA and PDMAs will update the situation on respective websites every 4 - 6 hours.

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- c. SUPARCO will provide the imageries of developing situations on daily basis.
 - d. To ensure a coordinated response, National Humanitarian Network (NHN)/ Pakistan Humanitarian Forum (PHF)/ UN Agencies and PRCS will share location of their stocks and human resource mapping with NDMA / PDMAs by 15 June 2022.
 - e. Important telephone numbers from NDMA perspective are shared at **Annex J**. All PDMAs / relevant stakeholders will share telephone directory of respective Provinces / Regions with NDMA and host it at respective website by 15 June 2022.
44. **Assistance/ Coordination with Ministries/ Departments**. Following ministries/ departments are requested for assistance as mentioned against each: -
- a. **Ministry of Defence**. Conduct of relief / rescue operations through Pakistan Armed Forces (helicopters, troops & rescue equipment) when required.
 - b. **Ministry of Interior & Anti-Narcotics Force**. Availability of aviation assets for emergency response, at a short notice.
 - c. **Pakistan Electronic Media Regulatory Authority (PEMRA)**. Airing of public service messages for community awareness on all media channels during prime hours.
 - d. **Pakistan Telecommunication Authority (PTA)**. To facilitate generation of SMS alerts for early warning, emergency relief and evacuation to required populace.
 - e. **Pakistan Tourism Development Corporation (PTDC)**. Provision of timely weather / flood related information to tourists including protection from dangers of flash floods, landslides, GLOF etc and help evacuation of stranded tourists through local Government / Pakistan Armed Forces.
 - f. **Ministry of Communication**. To conduct assessment for early restoration of communication infrastructure and remain prepared to shift earth moving machinery to affected areas.

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- g. **Ministry of Railways**. To monitor railway tracks on regular basis and assist transportation of relief goods to affected areas.
 - h. **PID**. Assist in running of awareness campaign through electronic and print media.
 - i. **Ministry of Health**. Coordination for deployment of medical teams and equipment.
45. **Requisitioning of Armed Forces**. Armed Forces will be requisitioned subject to provision of rules / regulations by PDMAs / DDMA's only in case of emergency through NDMA. Aviation support will be coordinated centrally by NDMA based on request of provinces and regions when called to assist in "Aid to Civil Power". Authorities utilizing services from Armed Forces will bear the cost of assets used which will be processed immediately after their employment. Armed Forces will be employed for following: -
- a. Rescue and relief operations by Field Units of Pakistan Army and Pakistan Navy (Sindh only).
 - b. Aviation support including provision of C-130 by Pakistan Air Force (helicopters of only Pakistan Army and Ministry of Interior will be employed in northern areas and AJ&K).
 - c. Support of divers of Pakistan Army and Pakistan Navy.
 - d. Special search and rescue operations for riverine floods by Pakistan Army and Pakistan Navy.
 - e. Medical support teams of all three services.
 - f. Search and rescue in urban areas collapsed structures and landslides / avalanches by USAR team of Pakistan Army.
46. **Information Management**
- a. NDMA, Provincial/ State/ GB DMAs will update respective websites on 12 hourly basis during entire Monsoon season. In case of a significant activity/ event/ flood situation, it will be updated on 3 – 6 hours basis.
 - b. Print and electronic media/ internet be utilized for dissemination of timely and accurate information.

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- c. Regular press releases, media tickers and press briefings will be ensured to present real time picture of ongoing activities, developing situations and losses/ damages, if any.
- d. To ensure post transmission record as well as redundancy, information will be disseminated through SMS, emails, fax and telephones.
- e. SMS / WhatsApp Groups of relevant stakeholders will be made to ensure real time information sharing.
- f. Mr. Idrees Mahsud, Member (DRR), NDMA is authorized spokesperson of NDMA, his contact no is 0340-6003337 whereas Mr. Zaheer Babar and Mr. Muhammad Irfan Virk, spokespersons of PMD, their contact no are 0321 – 5023944, 0334 – 3353933.

Part IV – Response Guidelines for Drought

National Response Guidelines against Drought

47. It is pertinent to highlight that Below Normal to near Normal Monsoon in second half may result into drought like conditions in arid zones of South Punjab, Sindh and Western Balochistan. All relevant stakeholders will continuously monitor the situation as per Drought Mitigation Plan Matrix given at **Annex K**. Following additional measures will also be considered: -

- a. In line with envisaged caseloads, food reserves will be maintained.
- b. Caseload for vulnerable groups be planned as per assessment, addressing their needs.
- c. Vulnerability of livestock along with the requirement of fodder and medicines must factor in all plannings and executed in case of need.
- d. Supply of clean drinking water to the vulnerable communities should be given top priority through available resources, while, provision of bottled water may also be considered as a last resort.
- e. Relief camps should be established to facilitate the migration of humans / livestock.

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- f. To prevent the outbreak of epidemics, comprehensive emergency health response be planned by relevant stakeholders. Sizeable stock of life-saving drugs & vaccines be ensured.
- g. Need based health mobile teams in districts & talukas may be considered by concerned Health Departments.

Conclusion

48. Pakistan lies in the region where Monsoon occurs as a regular climatic phenomenon, requiring accurate analysis of weather forecast, its probable effects and a well-integrated response. Therefore, there is a dire need of an efficient, proactive and synergized system for a well-coordinated response mechanism involving all the stakeholders, while addressing grey areas observed during Monsoon-2021. Flood risks can considerably be reduced through preparedness, timely early warning and well-orchestrated response against continuously evolving situations. Together, we can face the challenges and safeguard the precious lives of people and their property.

Government of Pakistan
Prime Minister's Office
National Disaster Management Authority
Islamabad
Dated: __ May, 2022

Brigadier
For Chairman NDMA
(Waseem Uddin)
Tel: 051-9214295
Fax: 051-9205086

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Distribution List. Attached.

Annexes

- A - NDM Act Clause – 9
- B - Flood Hazards Map – Pakistan
- C - GLOF Hazard Map – Pakistan
- D - Avalanche Hazard Map – Pakistan
- E - Landslide Hazard Map – Pakistan
- F - Drought Hazard Map – Pakistan
- G - Flood routing Map
- H - SITREP Format for Provinces / Districts
- I - Country Wide Location of NDMA Warehouses
- J - Important Contact Numbers
- K - Drought Mitigation Plan Matrix

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4.	Speaker National Assembly, National Assembly Secretariat, Islamabad	1
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6.	Secretary to Prime Minister, Prime Minister's Office, Islamabad	1
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8.	Secretary Ministry of State, Frontier Region & Narcotics Control, Islamabad	1
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28.	National Counter Terrorism Authority (NACTA), Ministry of Interior, Islamabad	1
29.	Aviation Division, Cabinet Secretariat, Islamabad	1
30.	Additional Secretary to Prime Minister, Prime Minister's Office, Islamabad	1
31.	Chairman, PEMRA Islamabad	1
32.	Chairman Senate Standing Committee on Climate Change, Senate Secretariat, Islamabad	1
33.	Chairman, National Assembly Standing Committee on Climate Change, Islamabad	2
34.	Chairman, National Assembly Standing Committee on Water and Power, Islamabad	1
35.	Chairman, National Highway Authority (NHA), Islamabad	2
36.	Chairman, WAPDA, WAPDA House, Lahore	2
37.	Chairman, NADRA, NADRA Headquarters, Islamabad	2
38.	Chairman, Pakistan Telecommunication Authority, Islamabad	2
39.	Chairman, Federal Flood Commission (FFC), Islamabad	2
40.	General Manager, Pakistan Railways, Islamabad	2
41.	Chairman, Indus River System Authority (IRSA), Islamabad	2
42.	Director General, NHEPRN, Islamabad	1

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46.	Director General, Frontier Works Organization (FWO), Rawalpindi	2
47.	Director General, Geological Survey of Pakistan (GSP), Islamabad	2
48.	Pakistan Commission of Indus Water (PCIW), Lahore	2
49.	National Weather Forecasting Centre, Pakistan Meteorological Department, Islamabad	2
50.	Managing Director, Pakistan Tourism Development Corporation, Islamabad	1
51.	Managing Director, National Transmission and Despatch Corporation (NTDC), Lahore	1
52.	General Manager SACRED, SUPARCO, Islamabad	2
53.	Managing Director, Utility Stores Corporation, Islamabad	3
54.	Secretary, Pakistan Boy Scouts Association, Islamabad	2
55.	Secretary, Pakistan Girls Guide Association, Islamabad	2
56.	Director General, Federal Directorate of Education, Islamabad	1
57.	Chief Meteorologist, Flood Forecasting Division (FFD), Lahore	2
58.	Coordinator, National Command and Operation Centre (NCOC)	1
59.	Chief Engineer, Mangla Dam	1
60.	Chief Engineer, Tarbela Dam	1
<u>Provincial Departments</u>		
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2.	Chief Secretary, Government of Sindh, Karachi	1
3.	Chief Secretary, Government of Balochistan, Quetta	1

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8.	Secretary Irrigation Department, Government of Sindh	1
9.	Secretary Irrigation Department, Government of Balochistan	1
10.	Secretary Irrigation Department, Government of Khyber Pakhtunkhwa	1
11.	Secretary Irrigation Department, Government of AJ&K	1
12.	C&W Department, Government of Gilgit Baltistan	1
13.	DG PDMA, Punjab, Lahore	1
14.	DG, PDMA Sindh, Karachi	1
15.	DG PDMA, Balochistan, Quetta	1
16.	DG PDMA, Khyber Pukhtunkhawa, Peshawar	1
17.	DG SDMA AJ&K, Muzaffarabad	1
18.	DG GBDMA, Gilgit	1
19.	DC, Islamabad	1
20.	Director Emergency & Disaster Management, CDA Islamabad	1
21.	DG Rescue 1122 Punjab, Lahore	1
22.	DG Rescue 1122, Balochistan, Quetta	1
23.	DG Rescue 1122, Khyber Pukhtunkhawa, Peshawar	1
24.	DG Rescue 1122 AJ&K, Muzaffarabad	1
25.	DG Rescue 1122 Gilgit Baltista, Gilgit	1
<u>Developmental & Implementation Partners</u>		
1.	Resident Coordinator, UNRC, Islamabad	1
2.	Country Head, WHO, Islamabad	1
3.	Country Head, UNWOMEN, Islamabad	1

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5.	Country Head, PHF (Pakistan Humanitarian Forum), Islamabad	1
6.	Country Head, IOM, Islamabad	1
7.	International Committee of the Red Cross (ICRC), Islamabad	1
8.	Country Director, UNOCHA, Islamabad	1
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10.	Country Director, UNHCR, Islamabad	1
11.	Country Director, UNDP, Islamabad	1
12.	Country Director, UNICEF, Islamabad	1
13.	National Humanitarian Network (NHN), Islamabad	1
14.	Chairman, Pakistan Red Crescent Society (PRCS) National Headquarters, Islamabad	1
<u>Pakistan Armed Forces</u>		
1.	Crisis Management Cell, JSHQ, Chaklala, Rawalpindi	3
2.	Military Operations Directorate, General Headquarters Rawalpindi (For Distribution to Field Formations / Commands / Headquarters)	15
3.	Director (Operations), Naval Headquarters, Islamabad	3
4.	Maritime Security Agency	2
5.	Director (Operations), Air Headquarters, Islamabad	3
6.	Director General, Strategic Plans Division (SPD), Rawalpindi	1
7.	Arms Branch, Engineers Directorate, General Headquarters, Rawalpindi	3
8.	Director General, National Logistic Cell, Rawalpindi	1
9.	Headquarters Punjab Rangers (Operations Branch), Lahore	1
10.	Headquarters Sindh Rangers (Operations Branch), Karachi	1

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12.	Headquarters Frontier Corps (Operations Branch), KP (South), D.I. Khan	1
13.	Headquarters Frontier Corps (Operations Branch), Balochistan (North), Quetta	1
14.	Headquarters Frontier Corps (Operations Branch), Balochistan (South), Turbat	1
15.	Frontier Constabulary, Peshawar	1
16.	Commanding Officer, 6 Army Aviation Squadron, Islamabad	1
17.	Headquarters Anti Narcotic Force (Operation Branch), Rawalpindi	1
<u>Internal</u>		
1.	PS to Chairman, NDMA	1
2.	Chief of Staff, ERRA	1
3.	Member (Operations), NDMA	1
4.	Member (A&F), NDMA	1
5.	Member (DRR), NDMA	1
6.	Senior Capacity Building Specialist (NIDM / PMU / Media)	1
7.	Director (Response), NDMA	5
8.	Director (Logistics), NDMA	1
9.	Director (R&R), NDMA	1
10.	Director (Administration), NDMA	1
11.	Director (Finance), NDMA	1
12.	Director (Implementation), NDMA	1
13.	Project Manager (GCC), NDMA	1
14.	Deputy Director (Procurement), NDMA	1
15.	Deputy Director (ICT), NDMA	1

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16.	Media Advisor, NDMA	1

NDM ACT 2010 CLAUSE-9

8. Establishment of the National Disaster Management Authority.— (1) The Federal Government shall, immediately after issue of notification under sub-section (1) of section 3, establish an Authority to be known as National Disaster Management Authority.

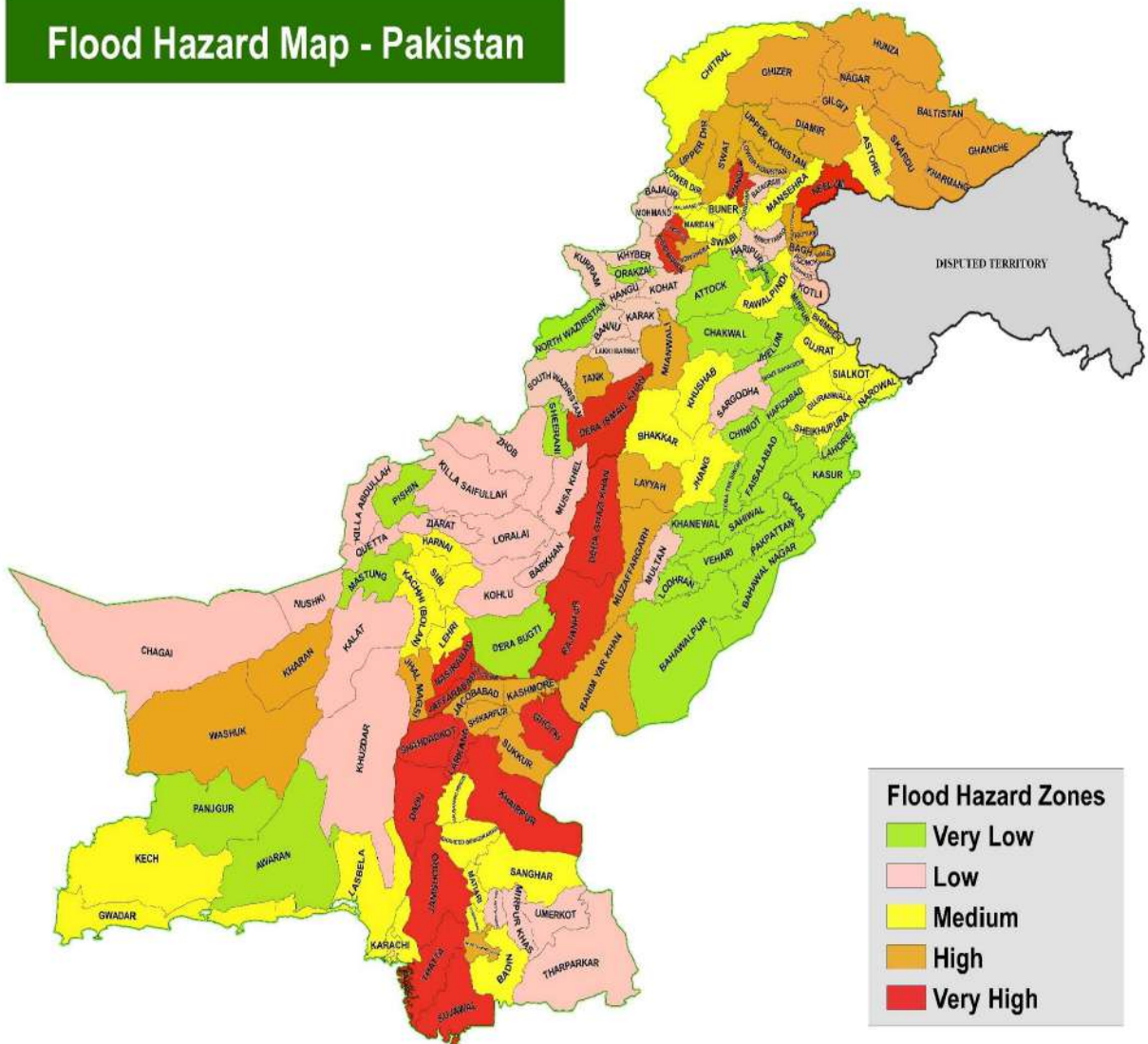
(2) The National Authority shall consist of such number of members as may be prescribed and shall include [the Director General] as its Chairperson.

(3) There shall be a Director General of the National Authority, to be appointed by the Federal Government, on such terms and conditions, as may be prescribed.

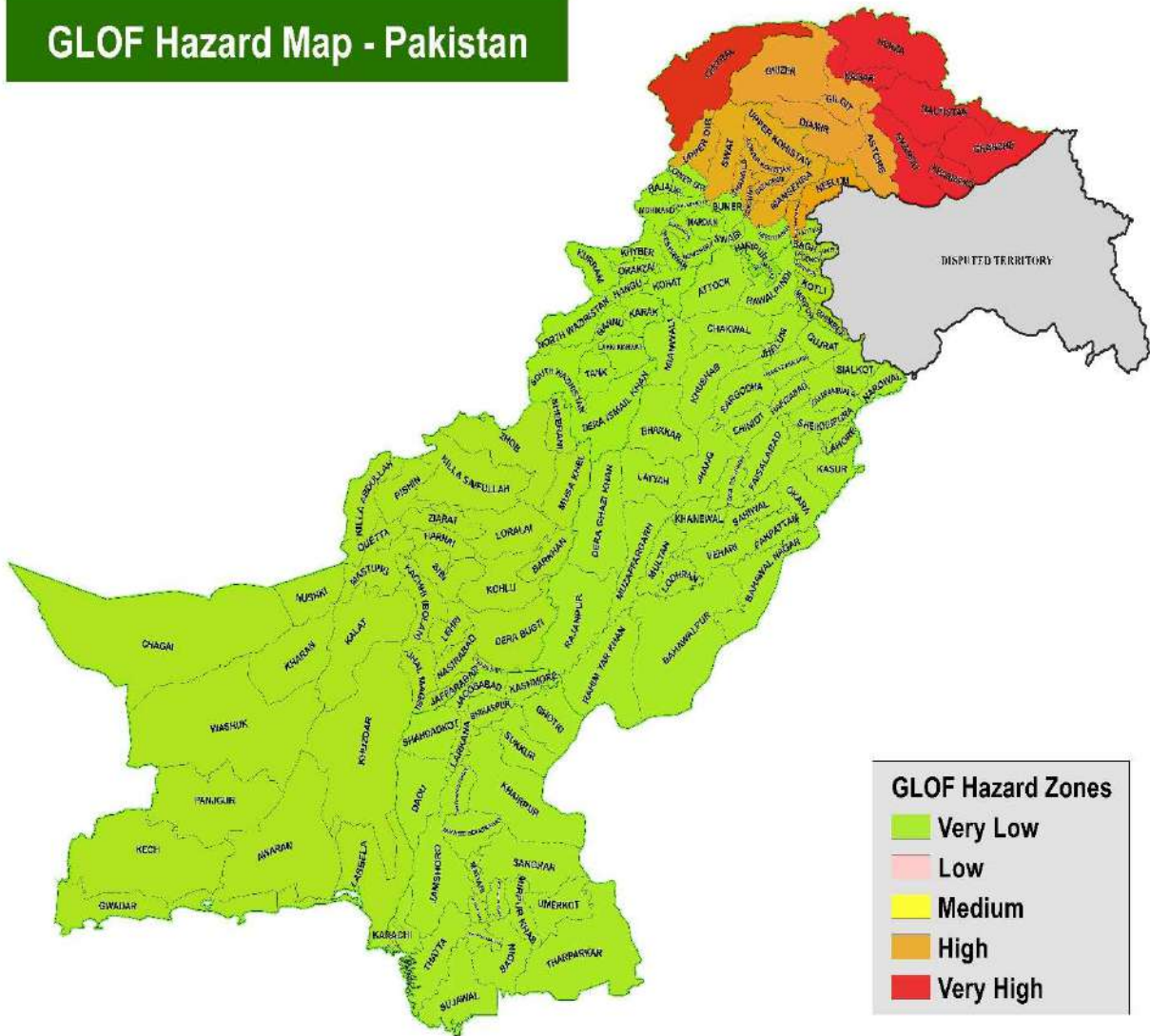
9. Powers and functions of the National Disaster Management Authority.— The National Authority shall—

- (a) act as the implementing, co-ordinating and monitoring body for disaster management;
- (b) prepare the National Plan to be approved by the National Commission;
- (c) implement, co-ordinate and monitor the implementation of the national policy;
- (d) lay down guidelines for preparing disaster management plans by different Ministries or departments and the Provincial Authorities;
- (e) provide necessary technical assistance to the Provincial Governments and the Provincial Authorities for preparing their disaster management

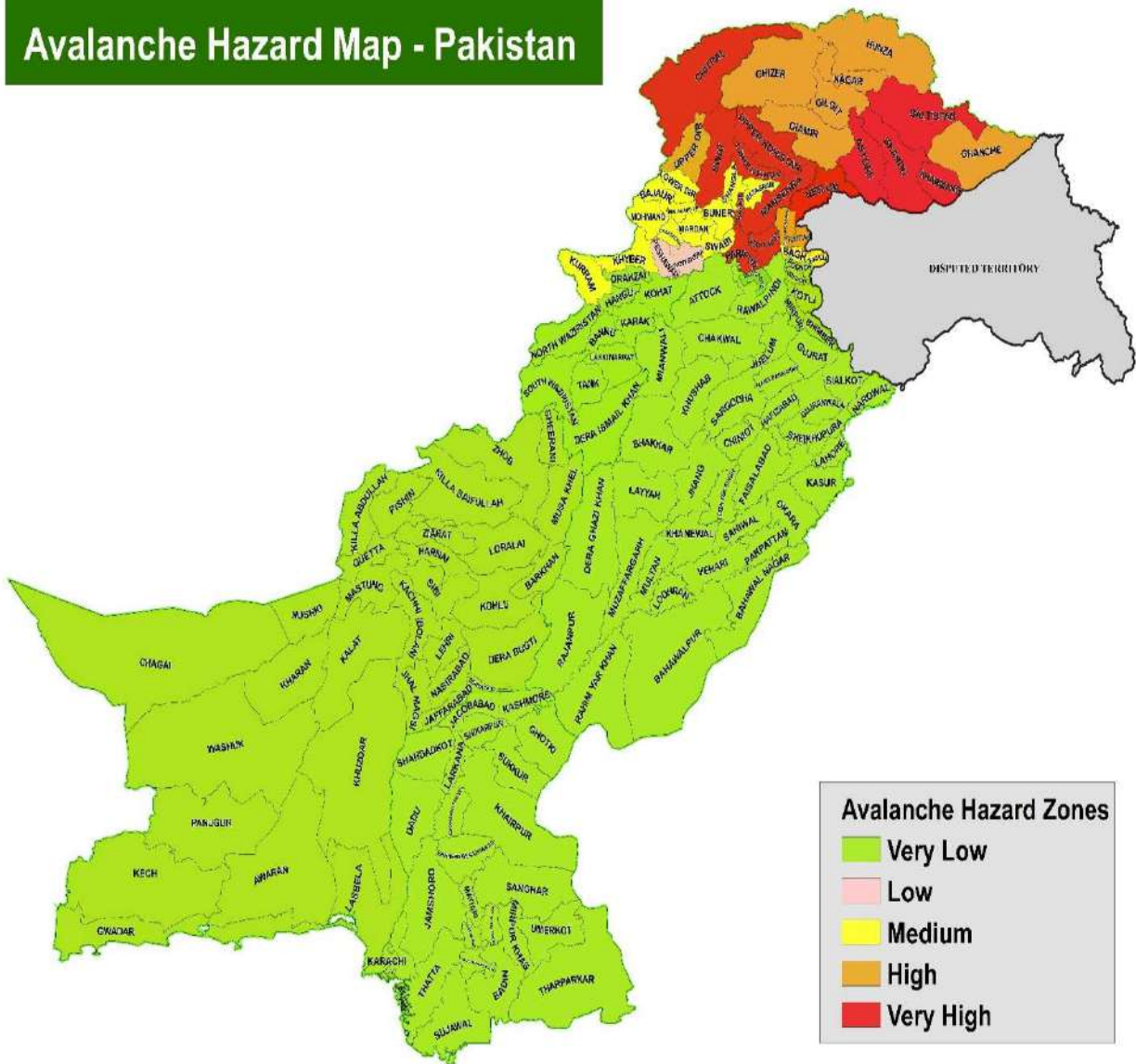
Flood Hazard Map - Pakistan



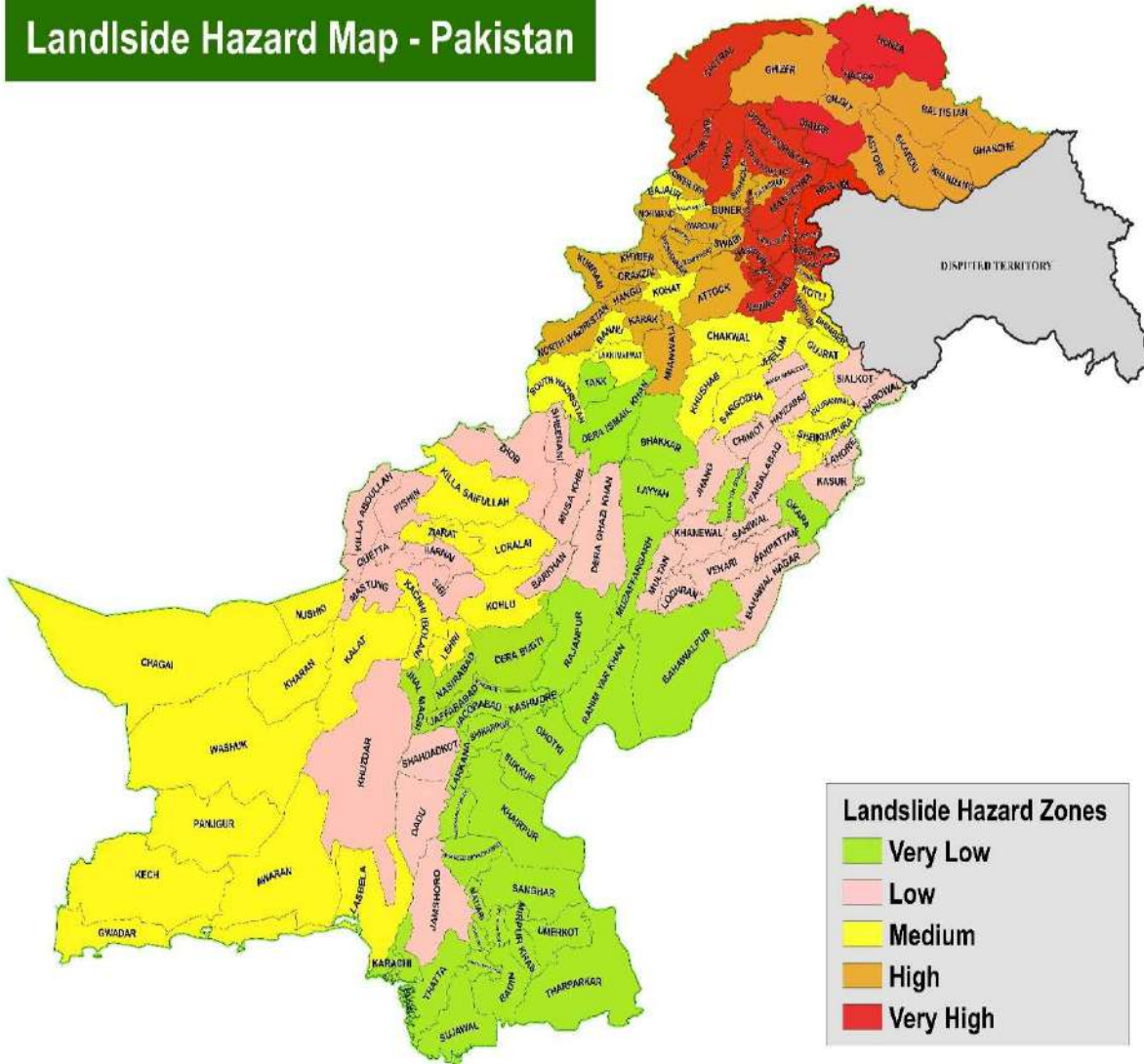
GLOF Hazard Map - Pakistan



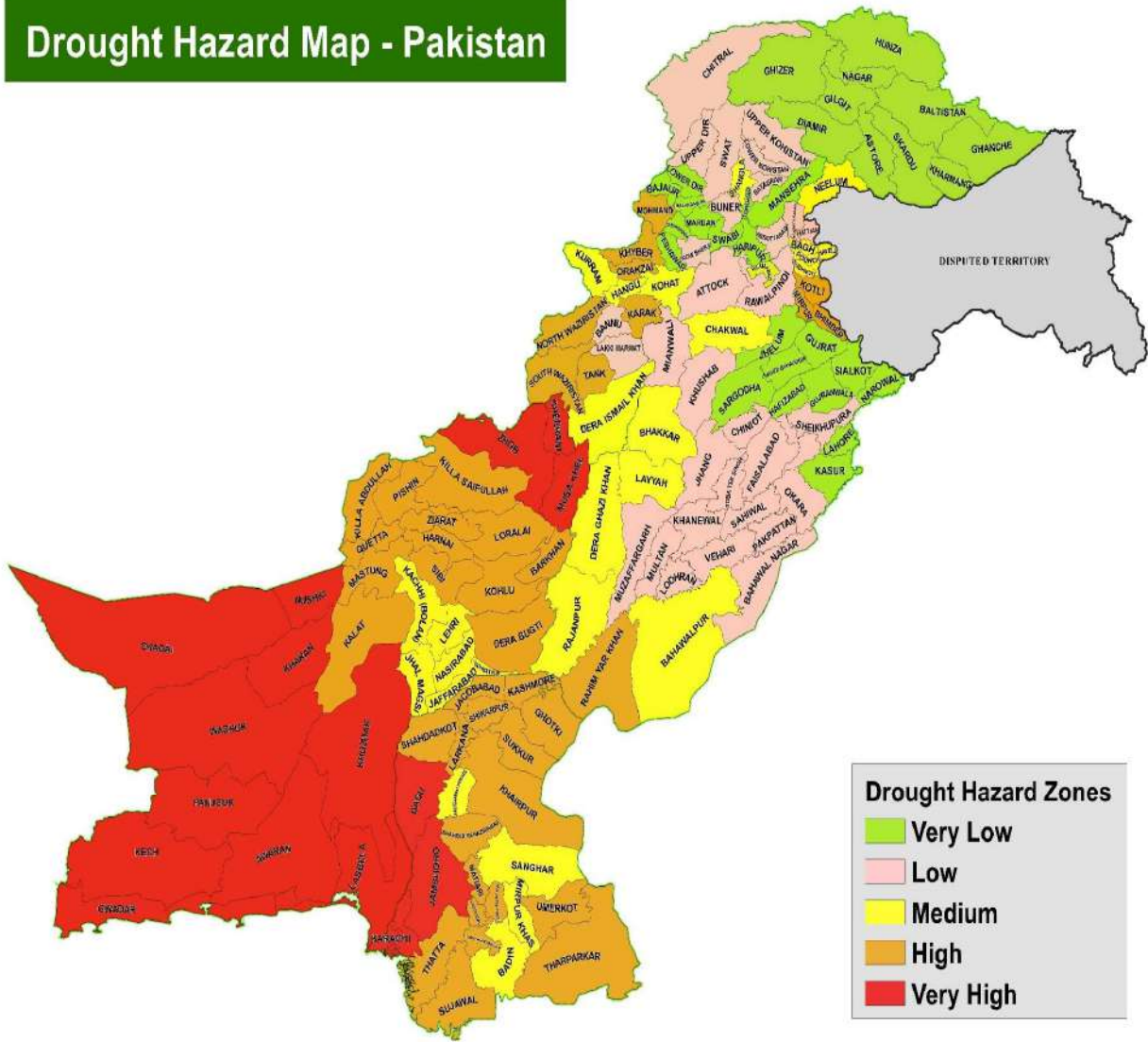
Avalanche Hazard Map - Pakistan

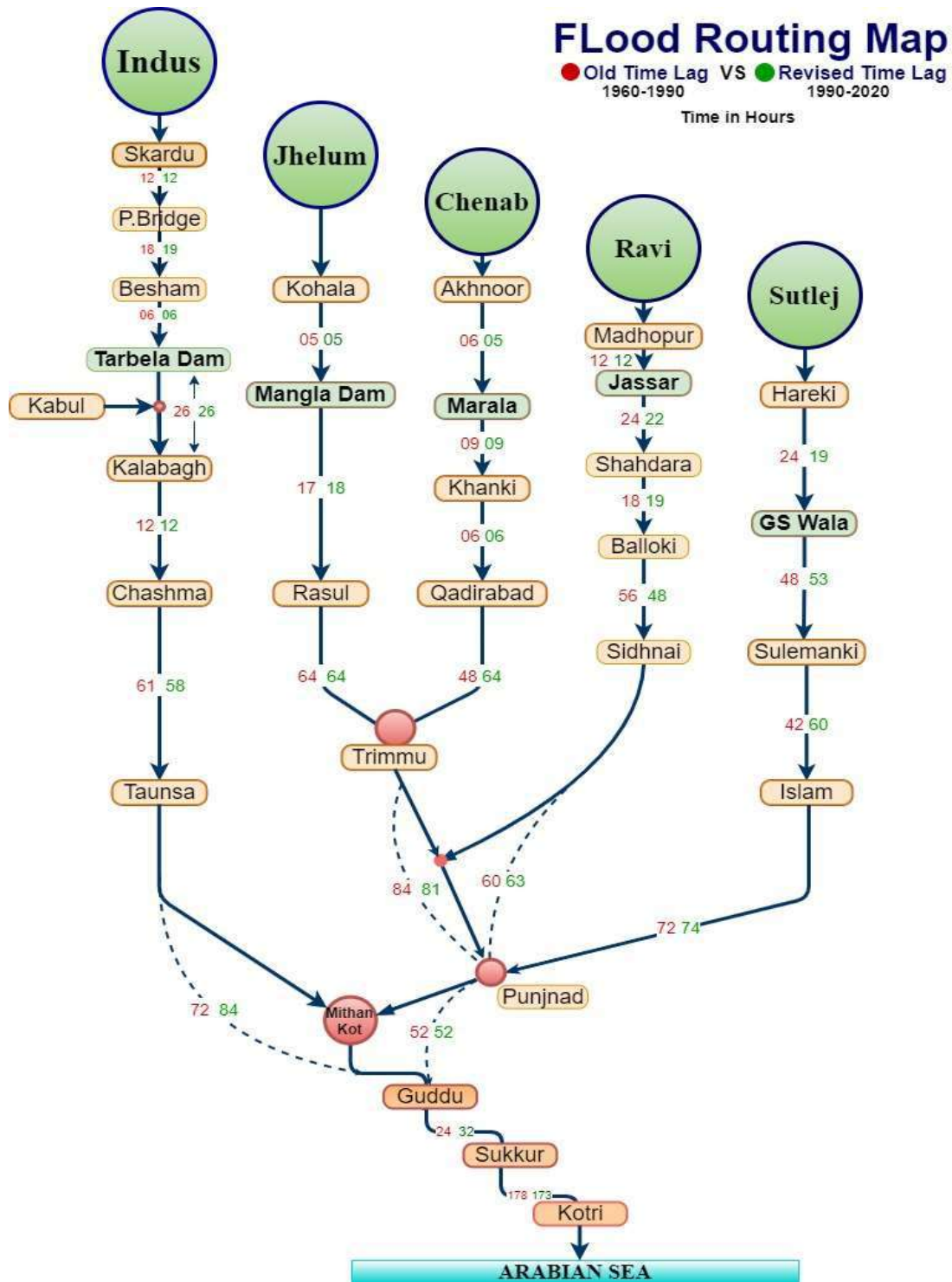


Landslide Hazard Map - Pakistan



Drought Hazard Map - Pakistan





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Annex H

SITUATION REPORT FORMAT FOR PROVINCES

MONSOON 2021 DAILY SITUATION REPORT NO – 001

(PERIOD COVERED: 1300 HRS __ June 2021 – 1300 HRS __ June 2021)

1. **Area Affected in Last 24 Hours**

Ser	District	Incident / Area Affected / Damage
a.		

2. **Extent of Damages**

a. **Damages (During Significant Events – Monsoon 2021)**

Ser	Category	Nos	Damaged/Washed Away/ Affected
a.			

b. **Summary of Overall Preliminary Damages of Infrastructure & Private**

Properties

District	Roads /Track	Bridge	Shop	Hotel	Masjid	Houses		Power Houses
						Partially Damage	Fully Damage	

c. **Preliminary Casualty – Death / Injured (from _____ to _____)**

District	Deaths				Injured			
	M	F	C	T	M	F	C	T

3. **Flood Relief Activities**

a. **Relief Camps Established**

b. **Rescue Activities**

c. **Aviation Activities**

d. **Relief Activities**

District	Tents	Food Items (Tons)	Blankets	Plastic mats	Sleeping bags

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4. **Threat to Next Likely Areas**
5. **River Discharges**
6. **Rainfall recorded during Past 24 Hours**
7. **Weather Forecast for Next 24 Hours**

COUNTRY WIDE LOCATION OF NDMA WAREHOUSES

1. **Strategic Humanitarian Response Facilities (HRFs)**

Serial	Location	No of Sheds		
		PDMA	NDMA	Total
a.	Jallozai / KP	3	1	4
b.	Lahore / Punjab	3	1	4
c.	Muzaffargarh / Punjab	2	1	3
d.	Jamshoro / Sindh	2	1	3
e.	Sukkur / Sindh	2	1	3
f.	Quetta / Balochistan	3	1	4

2. **NDMA Warehouses.** In addition to strategic HRFs, NDMA has following warehouses in the Country:-

a. **Punjab**

(1) Rawalpindi (Central Stock to support Punjab / KP / FATA / AJ&K/ GB / ICT).

(2) Lahore.

b. **Sindh**

(1) Karachi.

(2) Sukkur (Central stock to support Sindh / Balochistan).

c. **Balochistan.** Quetta.

d. **AJ&K.** Muzaffarabad.

e. **GB**

(1) Gilgit.

(2) Skardu.

3. **Flospans.** 53 x Flospans have been established at different location across the Country.

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Annex J

IMPORTANT TELEPHONE NUMBERS

Ser	Department	Contact Number
1.	National Emergency Operation Centre (NDMA) Islamabad	UAN-051-111-157-157 051-9205037
2.	Provincial Emergency Operation Centre (PEOC) Punjab	042-99204408 042-99203163
3.	Provincial Emergency Operation Centre (PEOC) Sindh	021-99332005 021-99332003
4.	Provincial Emergency Operation Centre (PEOC) Balochistan	081-9241133 081-9241118
5.	Provincial Emergency Operation Centre (PEOC) KPK	091-9213867 091-9213845 091-9213855
6.	State Emergency Operation Centre (SDMA) SDMA AJ&K	05822-921536 05822-921643 05822-921101
7.	GBDMA Emergency Operation Centre, Gilgit	05811-922030 920874-75
8.	Pakistan Meteorological Department (PMD)	051-9250367 051-9250368 051-9250364
9.	Flood Forecasting Division, Lahore	042-99200208
10.	Army Flood Control Centre, Engineers Directorate	051-5202059 051-5202060 203525 (DEFCON) 8000-30855 (PASCOM)
11.	DG NHEPRN	051-9255708-9
12.	Federal Flood Commission	051-9244604 051-9244616
13.	IRSA, Islamabad	051-9244600 051-9244599
14.	SUPARCO Islamabad	051-9075265
15.	Nullah Lai Control Room	051-9250566

National Monsoon Contingency Plan-2022

Ser	Department	Contact Number
16.	Rescue 1122 Punjab	042-37423372
17.	Rescue 1122 Rawalpindi	051-9291185
18.	Rescue 1122 Khyber Pakhtunkhwa	091-9222483-4
19.	Rescue 1122 Gilgit Baltistan	05811-922137
20.	Rescue 1122 Azad Jammu & Kashmir (SDMA)	0333-3331122
21.	Geological Survey of Pakistan, Islamabad	051-9269579 051-9255141
22.	COMKAR Karachi	021-48506113 021-48501705
23.	Pakistan Maritime Security Agency, Karachi	021-99214624 021-99214625
24.	Marala Headworks Observatory	052-35021027
25.	PCIW (Pakistan Commission for Indus Water) Lahore	042-99212783-86
26.	GM, Pakistan Railway Lahore	042-99201700
27.	Punjab Irrigation Department	042-99212117-8
28.	Balochistan Irrigation Department	081-9201074
29.	Sindh Irrigation Department	021-99222949 021-99222950
30.	Azad Jammu & Kashmir Irrigation Department	05822-921596 05822-921157
31.	KPK Irrigation Department	091-9210845 091-9212116
32.	Civil Defence Punjab	042-99212109 042-99212111
33.	Civil Defence Sindh	021-99243765
34.	Civil Defence KPK	091-9212176 091-2263158-59
35.	Civil Defence Balochistan	081-9201853 081-9201118
36.	Terbela Dam	0938-281185
37.	Mangla Dam	0544-639353
38.	Rawal Dam	051-9255756 051-9255757-8-9

DROUGHT MITIGATION PLAN MATRIX

Indicator	Policy Inputs	Developmental / Mitigation / Emergency Response Measures	
		Long to Medium Term	Short Term
Water Security	<ul style="list-style-type: none"> • Enhance water storage infrastructure capacity • Promote <ul style="list-style-type: none"> • Water conservation • Integrate water resource management • Remote sensing driven capacity • Sustainable use of water • Community participation & public awareness on water conservation • Ecological approaches • Reinforce legislative framework • Optimize Wetlands capacity • Mainstreaming Climate Change 	<p><u>Supply Side Development Interventions:</u></p> <ul style="list-style-type: none"> • National water storage capacity enhanced; • Thar Canal; • Flood water storage along Sutlej; • Extension of Raineer Canal; • Transferring piped water in Thar & Kohistan; • RO Plants installation; • Fresh water extraction; • Tube wells; • Extension of water distribution network 	<ul style="list-style-type: none"> • Water contingency planning • Water tinkering / bottled distribution • Water purification • Cloud seeding (artificial rains) • Hygiene & sanitation
		<p><u>Water Demand Management:</u></p> <ul style="list-style-type: none"> • Water conservation awareness • Participatory approaches • Legislative & administrative measures • Community based sustainable solutions 	
		<p><u>Ecological Solutions:</u></p> <ul style="list-style-type: none"> • Revive natural water basins • Promote rain water harvesting • Water storage promotion • Small and check dams • Reverse osmosis plants • Water spreading • Recycling of used water 	

National Monsoon Contingency Plan-2022

Indicator	Policy Inputs	Developmental / Mitigation / Emergency Response Measures	
		Long to Medium Term	Short Term
		<ul style="list-style-type: none"> Participatory approach in public interventions; Create Water Management Boards regionally and in provinces 	
Food & Agriculture	<ul style="list-style-type: none"> Introduce drought and heat resistant crops Horizontal expansion of cultivated lands Corps risks management Efficient food chain management Coordinated and inclusive policy implementation Awareness raising and community capacity building in arid zone Arid zone agriculture research institutes in Sindh & Balochistan Water loss reduction Integrated water basin management 	<p><u>Arid Zone Agricultural Practices:</u></p> <ul style="list-style-type: none"> Promote sailaba and khushkaba practices Introduce drip irrigation Cropping calendars adapted to avoid heat losses Conjunctive use of surface and ground water Shift to less water demanding crops Saline water agricultural practices Soil conservation Rain water harvesting & storage Watershed agricultural management Soil fertilization Best practices to be widely shared 	<p><u>Food Security Short Term Response:</u></p> <ul style="list-style-type: none"> Deployment of wheat reserves in the vulnerable districts Food security vulnerability assessment Food distributions to the vulnerable population Efficient & equitable distribution mechanisms Exit strategy
Health	<ul style="list-style-type: none"> Promote health security through improved health service delivery Reinforce preventive and curative health focus Mainstreaming reproductive health standards 	<p><u>Developmental:</u> Gap filling in health infrastructure;</p> <p><u>Health Service Delivery & Emergency Response:</u> Following to be reinforced:-</p> <ul style="list-style-type: none"> Preventive health care Emergency health outreach Reproductive health care Community based malnutrition programme Disease early warning, epidemic control and responses 	

National Monsoon Contingency Plan-2022

Indicator	Policy Inputs	Developmental / Mitigation / Emergency Response Measures	
		Long to Medium Term	Short Term
	<ul style="list-style-type: none"> Infrastructure and human resource development Health awareness raising 	<ul style="list-style-type: none"> Health referral system Human resource deficiencies addressed Health advocacy and capacity building 	
Rangeland & Livestock Management	<ul style="list-style-type: none"> Policies aligned with environmental sustainability Promote collaborative rangeland management Governance & ownership issues streamlined Incentive driven community based management. Afforestation efforts. Mitigate desertification. Renewable energy solutions to check deforestation. Research institutes. Sustainable livestock population. Promote livestock and rangeland research. Private sector's inclusion in veterinary service. 	<p><u>Rangeland Management:</u> Promote:</p> <ul style="list-style-type: none"> Vegetative barriers to prevent erosion. Mapping / stocktaking. Introduction of exotic grasses, trees varieties. Water storage and rainwater harvesting. Sustainable usages. Revival / reinvigoration. Heat tolerance promoted. Desertification measures. Watershed management. Check deforestation through participatory methods. Artificial fertilization techniques. Controlled rangeland burning. <p><u>Livestock Management:</u></p> <ul style="list-style-type: none"> Census, audit. Veterinary cover. Disease surveillance & response. Multi nutrient blocks. Promote de-stocking. Livestock sanctuaries. Communities capacity building in livestock management. Advocacy, awareness generation. 	<p><u>Livestock Emergency Management:</u></p> <ul style="list-style-type: none"> Mapping and monitoring of vulnerable caseload Emergency response planning, management Livestock sanctuaries deployed with fodder and water Fodder banks to be deployed Introduce briquettes / MNBs as emergency fodder

National Monsoon Contingency Plan-2022

Indicator	Policy Inputs	Developmental / Mitigation / Emergency Response Measures	
		Long to Medium Term	Short Term
		<ul style="list-style-type: none"> Value addition of livestock products. 	
Climate Change Adaptation		<ul style="list-style-type: none"> Climate change hazards, risk and vulnerability mapping. Scenarios development. Adaptation strategies and actions. Generate awareness. 	
Community Resilience		<p>CBDRM approach for reinforcing resilience as:</p> <ul style="list-style-type: none"> Structural solutions. Non-structural solutions. Ecological solutions. Climate change adaptation. 	