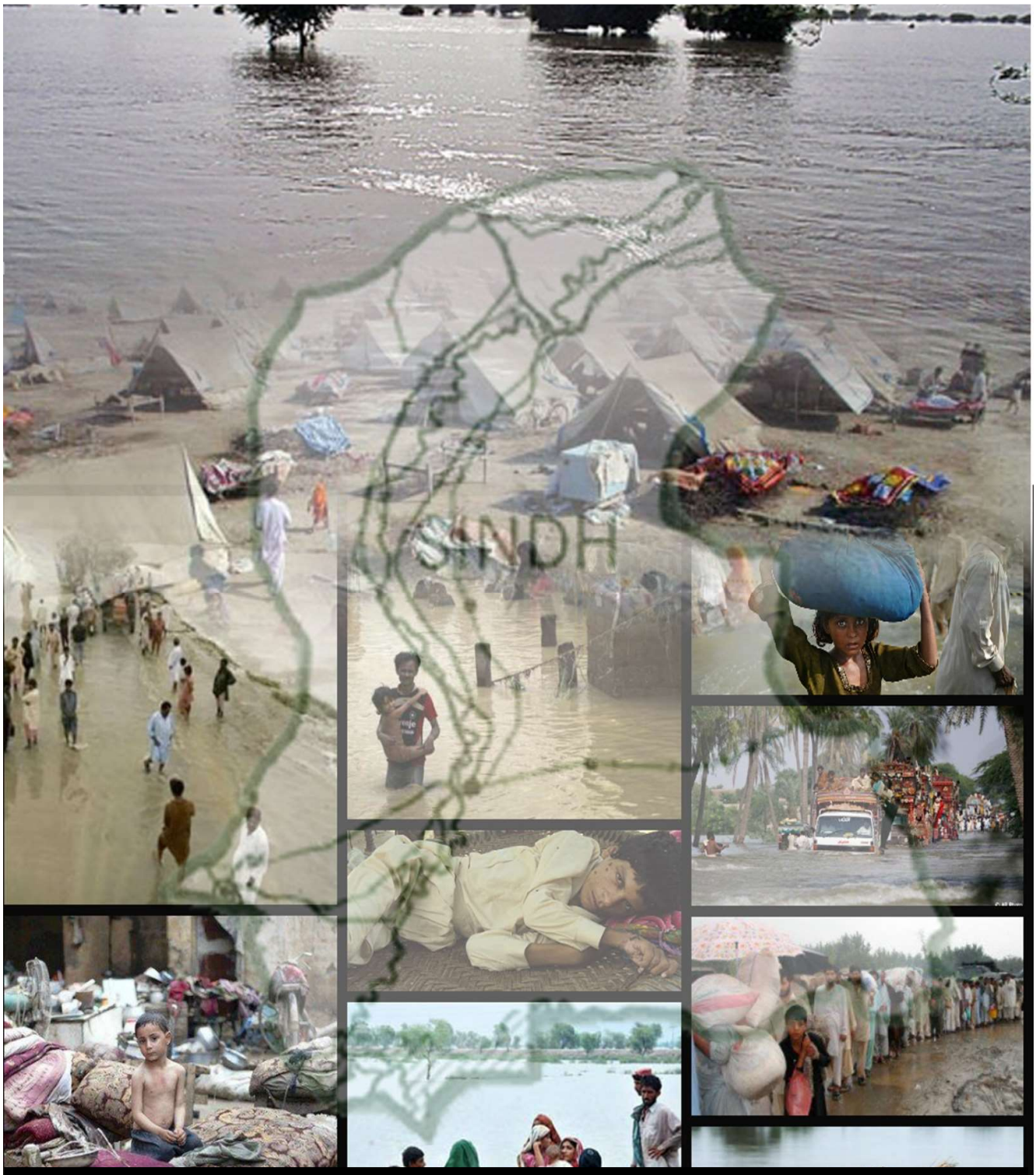
PROVINCIAL MONSOON CONTINGENCY PLAN 2022
PROVINCIAL DISASTER MANAGEMENT AUTHORITY



REHABILITATION DEPARTMENT
GOVERNMENT OF SINDH

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LIST OF ACRONYMES

DDMA	District Disaster Management Authority
DRR	Disaster Risk Reduction
DEOC	District Emergency Operation Center
DMA	Disaster Management Authority
ERC	Emergency Relief Cell
FDP	Flood Displaced Person
FFC	Federal Flood Commission
FFD	Flood Forecasting Division
FFT	Flood Forecasting Telemetry System.
GHQ	Army General Headquarters
HH	Households
INGO	International Non-Governmental Organization
LBOD	Left Bank Outfall Drain
MIRA	Multi Cluster Initial Rapid Assessment
NDMA	National Disaster Management Authority
NGO	Non-Governmental Organization
NHA	National Highways Authority
NHEPRN	National Health Emergency Preparedness and Response Network
OCHA	UN Office for the Coordination of Humanitarian Affairs
O&M	Operations and Maintenance
PDMA	Provincial Disaster Management Authority
PEOC	Provincial Emergency Operations Center
PMD	Pakistan Meteorological Department
PRCS	Pakistan Red Crescent Society
RBOD	Right Bank Outfall Drain
SASCOF	South Asian Climate Outlook Forum
SITREP	Situation Report
SUPARCO	Space and Upper Atmosphere Research Commission
SOPs	Standard Operating Procedures
UN	United Nations
UNICEF	UN Children’s Fund
USAR	Urban Search and Rescue Team
Wash	Water, Sanitation and Hygiene
WHO	World Health Organization
WMO	World Meteorological Organization

EXECUTIVE SUMMARY

The nature and intensity of natural disasters has changed considerably over the period of time. Disaster risk reduction and management, attempting to address risks associated with potential hazards is an integral part of development. Consequently, it is less events and more process oriented. It is based on a continuous assessment of vulnerabilities and risks involving the role of multiple actors and stakeholders. Given the complexity, contingency planning is required to define what preparedness mechanisms will be used, when and where. Before a response is required, contingency planning affords agencies, both government and humanitarian the opportunity to define when, where and why their emergency response resources will be deployed, when emergency funds will be used and what kind of responses, materials and types of personnel they will need.

The lessons learnt from unprecedented floods of 2010 followed by heavy monsoon rainfalls of 2011, flash flooding in 2012 and subsequent disasters required quick and effective actions to control the situation and above all, to save lives. However, effective action depends on the existence of practical and well tested contingency plans. The Provincial Contingency Plan has been formulated to translate recommendations from district administrations, line departments and other stakeholders into action. However, the devastation caused due to floods/ rainfalls witnessed during recent years has necessitated for taking on board all agencies for an integrated contingency planning, involving government departments, districts administrations, armed forces and humanitarian assistance organizations, thereby ensuring synergized and optimal utilization of resources by agencies in the field while complementing each other with appropriate linkages and better coordination to support actions along lines of command.

PDMA, Rehabilitation Department, Government of Sindh continues to emphasize upon the Contingency Planning process as a preparedness measure for response to natural hazards particularly Monsoon Contingency. Following

catastrophic floods since 2010, this plan focuses on planning for the upcoming Monsoon – 2022 hazards to identify and analyze related risks for not just their humanitarian impacts but also the associated adverse effects on private and public infrastructure, and to define roles and responsibilities of diverse stakeholders for preparedness and response.

It is worth mentioning here that PDMA, Rehabilitation Department, Government of Sindh shared guidelines for 2022 Monsoon contingency planning with district administrations, line departments, and other stakeholders primarily for anticipating likely scenarios and perceiving threat levels. While further drawing conclusions from the inputs through the technical experts and relevant departments, it mainly involves identifying gaps and challenges to effective emergency response and then planning and implementing a series of actions to increase response capacity and reduce potential gaps. Unlike former simple or generic plans scenarios were used as a basis for developing preparedness plans. The key anticipated outcomes are:

- Awareness for Building Capacities for Response,
- Depict anticipated threat perception for earmarking required resources,
- Build Integrated Planning Capacities, and
- Define required gaps ensuing Preparatory Measures.

The preparations have been made keeping in view the recent years. Whereas, the PMD have predicted that overall, a tendency for above normal precipitation is likely over the country during forecast season (JAS). Monsoon rainfall is expected to be above normal over Punjab and Sindh whereas slightly above normal rainfall is expected over remaining parts of the country. First phase (1st July to mid-August) of monsoon is expected to be wet as compared to the last phase (mid-August to end of September). Area weighted normal rainfall of Pakistan during Jul – Sep is 140.8 mm.

CHAPTER – 1

OVERVIEW OF MONSOON / FLOODS

1.1 FLOODS

When rivers overflow their banks they cause damage to property and crops. Floods are common and costly Natural Disasters.

Floods usually are local, short-lived events that can happen suddenly, sometimes with little or no warning. They usually are caused by intense storms that produce more runoff than an area can store or a stream can carry within its normal channel. Rivers can also flood when dams fail, when ice jams or landslides temporarily block a channel, or when snow melts rapidly. In a broader sense, normally dry lands can be flooded by high lake levels, by high tides, or by waves driven ashore by strong winds.

Small streams are subject to floods (very rapid increases in runoff), which may last from a few minutes to a few hours. On larger streams, floods usually last from several hours to a few days. A series of storms might keep a river above flood stage (the water level at which a river overflows its banks) for several weeks.

Floods can occur at any time, but weather patterns have a strong influence on when and where floods happen. Cyclones, or Storms that bring moisture inland from the Ocean, can cause floods. Thunderstorms are relatively small but intense storms that can cause floods in smaller streams. Frontal storms form at the front of large, moist air masses moving across the Country and can cause floods. Hurricanes are intense tropical storms that can cause floods.

The size, or magnitude, of a flood is described by a term called Recurrence Interval. By studying a long period of flow records for a stream, it is possible to estimate the size of a flood that would, for example, have a 5-year Recurrence Interval (called a 5-year flood). A 5-year flood is one that would

occur, on the average, once every 5 years. Although a 100-year flood is expected to happen only once in a century, there is a 1 percent chance that a flood of that size could happen during any year.

Flood plains are lands bordering rivers and streams that normally are dry but are covered with water during floods. Floods can damage buildings or other structures placed in flood plains. They also can change the pattern of water flow and increase flooding and flood damage on adjacent property by block

The confluence of River Basins, the Canal Irrigation Network and Interrupted Drainage System and control of Head works on three major rivers, part of Indus River System with India are some of the major reasons of flooding in Pakistan.

1.1.1 CAUSES OF FLOODS

Floods can be divided In five major categories

(I) Monsoon Floods: Flooding along rivers is natural and inevitable. Some floods occur seasonally, when monsoon rains coupled with melting snows fill river basins with too much water, too quickly. Torrential rains from decaying Hurricanes or Tropical Systems can also produce river flooding.

It has been argued that El-Nino and La Nina factors have upset the system of rains in India, Pakistan, Iran and Afghanistan. Incidentally El-Nino events are a local manifestation of a global phenomenon, which begins with the relaxation of the wind stress that drives warm water towards the West. In the case of the monsoons, which are also part of a global phenomenon, the atmospheric pressure at sea level at the South-West of the Indian Peninsula, the ocean temperature in the Bay of Bengal and the rainfall fluctuation across South Asia are inter-related critical factors. Whereas, La-Nina is a counterpart of El-Nino.

(II) Flash Floods: An arroyo is a water-carved gully or a normally dry creek found in arid or desert regions. When storms appear in these areas, the rain

water cuts into the dry dusty soil creating a small fast-moving river. Flash flooding in an arroyo can occur in less than a minute, with enough power to wash away sections of pavement.

Because of its rapid nature, flash floods are difficult to forecast and give people little time to escape or to take food and other essentials with them.

(III) Floods due to Breaches: Floods due to the breaches of river embankments and canal breaches are a frequent occurrence in all the districts of Pakistan.

(IV) Urban Floods: As undeveloped land is paved for construction, it loses its ability to absorb rainfall. Rainwater cannot be absorbed into the ground and becomes runoff, filling parking lots, making roads into rivers, and flooding basements and businesses. An urban area can be flooded by an amount of rainfall that would have had no impact in a rural area. But in crowded towns and cities, rainwater flows into storm sewers and drainage thus flooding them.

(V) Coastal Floods - Hurricanes and Tropical storms can produce heavy rains, or drive ocean water into land. Beaches and coastal houses can be swept away by the water. Coastal flooding can also be produced by sea waves called Tsunamis, giant tidal Waves that are created by Volcanoes or Earthquakes in the ocean.

1.2 MONSOON HAZARDS IN SINDH

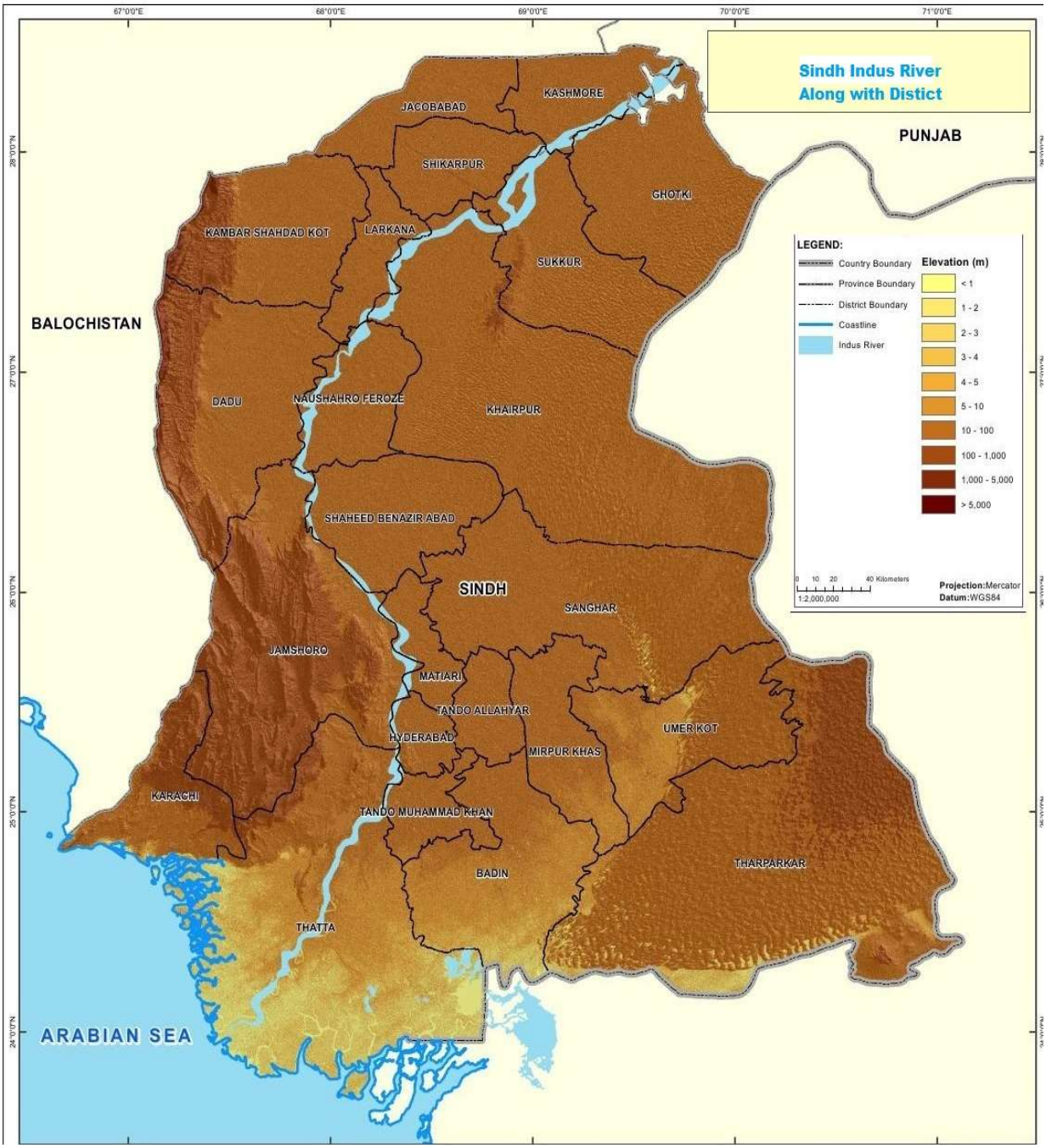
River Indus after receiving water from 4 rivers' system, causes floods in the Sindh Province. The upper regions of the Sindh Province constitute the Districts of Kashmore, Shikarpur and Larkana on the right bank of River Indus and Ghotki, Sukkur, Khairpur, Naushahro Feroze and Shaheed Benazirabad on the left bank of River Indus. These Districts on the right and left of River Indus face a severe threat owing to passage of River Indus. The districts in the lower Sindh, prone to Riverine flooding include Dadu and Jamshoro on the right bank of River Indus and Matiari, Hyderabad, Thatta and Tando Muhammad Khan on the left bank. The length of River Indus through the province is 750 kms.

Districts of Jacobabad, Kambar @ Shahdadkot, Larkana, Dadu, Jamshoro and Karachi East District, are also vulnerable to hill torrents which cause flash flooding, the early warning possibility for which is very minimal.

Monsoon hazards in Sindh emerge as a result of heavy precipitation and subsequent high floods at Panjnad in Indus river and through flash flooding in numerous hill torrents on the Southern part of the Province. The Province is also vulnerable to precipitation generated flash flooding and urban flooding because of cloud burst. In fact historical evidence suggests that natural and man-made disasters have a significant toll in human lives in Karachi alone. Given the complexity, the simultaneous occurrence of riverine and flash floods, heavy precipitation and cloud burst phenomenon can worsen the impacts of monsoon generated disasters in the province.

1.3 MAP WITH FLOW OF RIVER INDUS ALONG DISTRICTS OF SINDH

Fig.1 Flow of River Indus



1.4 CHANGES IN THE RIVER MORPHOLOGY

The unprecedented nature of 2010 Floods caused occurrence of unregulated river flow patterns resulting in widened spans and erosions at various places. During Monsoons these trends are likely to render populations residing close-by at risk; undermining the effectiveness of the protective arrangements; and, risk severance of bridges and communication infrastructure; therefore, river training or regulating river flows to defined channels is considered essential for flood impact mitigation.

1.5 PERFORMANCE OF WATER REGULATORY INFRASTRUCTURE

The unprecedented floods of 2010 in, addition to their colossal humanitarian impacts exposed the water regulatory infrastructure to tremendous pressures. The water which flowed surpassed the earlier records by manifolds; a detailed comparison is given in the table below. Moreover, the Schematic Model of flood routing of River system also shown below depicts that average travel time between the three hydraulic structures (Guddu, Sukkur and Kotri) is 24 hours; thus necessitating to put in place an effective and prompt decision making.

1.5.1 WATER FLOW COMPARISON

Barrage	Design Capacity (in cusecs)	Maximum Recorded (in cusecs)	Year	2010 Floods (in cusecs)	Comparison with Earlier Record (Ratio)	Comparison with Design Capacity (Ratio)
Guddu	1,200,000	1,199,000	1976	1,148,000	0.96	0.95
Sukkur	900,000	1,166,000	1976	1,130,000	1.295	1.25
Kotri	875,000	980,000	1956	964,000	0.98	1.10

Table 1: Water Flow Comparison

1.5.2 FLOOD ROUTING MODEL

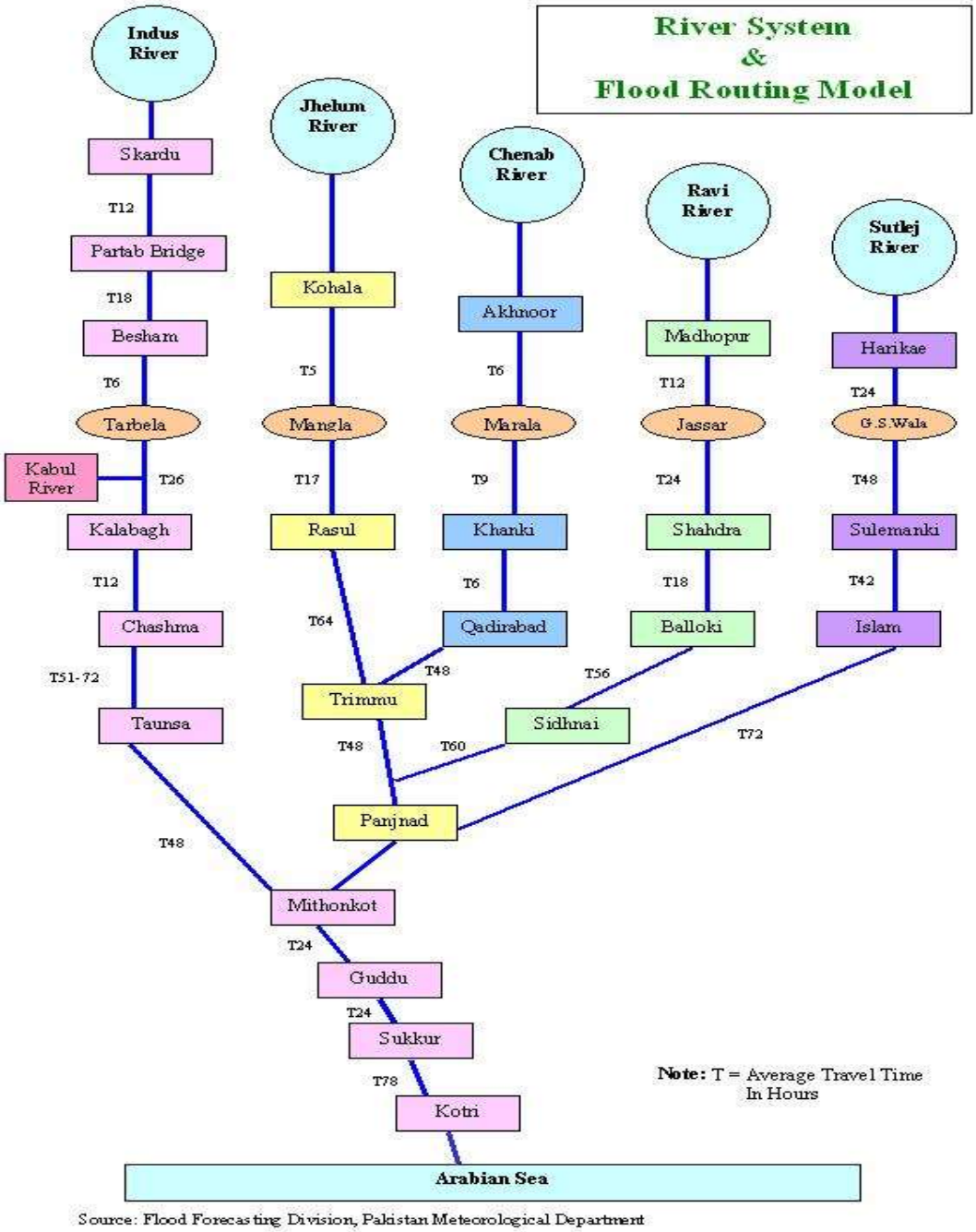


Fig. 2 Flood Routing Model

1.6 LATENT VULNERABILITIES

Some of underlying vulnerabilities which increase the threat of Monsoon hazards in Sindh are chalked out as under:

- New areas of Eastern Baluchistan and Northern Sindh have been impacted by floods in recent years consecutively, thereby compounding their vulnerabilities.

- 2011 monsoon rain induced floods in Southern Sindh, which does not directly fall in monsoon zone, had exposed a large segment of population, who were traditionally considered to be safe from adverse effects of monsoon, to the devastation of life and property.

- Population pressures have resulted in encroachments on river flood plains, thereby enhancing risks and vulnerabilities.

- Rapidly increasing population at urban cities and encroachment at Nallahs

- Detailed flood plans' mapping covering entire Indus River System, its Tributaries, and Nallahs is yet to be done; this has been identified as a priority area in the Provincial Disaster Management Plan on the basis of which land use planning and demarcation of waterways would be done to reduce risks from flood hazard.

- Widespread Environmental Degradation had reduced the flood water absorption capacities of catchment regions and accentuated downstream vulnerabilities.

- Limited capacity in weather and flood forecasting, particularly for flash floods, necessitates preparedness to meet unpredictable challenges.

- Ensure cleaning and de-silting of all main Nallah and drains in the urban centres of Sindh.

- Installation of de-watering pumps along with continuous supply of electricity at low lying areas to avoid urban flooding during rains.

- Establish strong coordination mechanism among multiple stakeholders so that the emergency can be handled amicably. Especially in Karachi where there are more than 16 territories under control of different stakeholders.

1.7 DATA OF HISTORICAL FLOOD EVENTS

The historical data of losses from floods in Sindh shared by relief department have been covered in table attached at **Annex-A**

1.8 WEATHER OUTLOOK FOR SUMMER MONSOON 2022

Pakistan Meteorological Department has issued **"Outlook for Monsoon 2022 (Jul-Sep) on 7th June, 2022 (Annex-J),** which has been reproduced as under:

Synoptic situation:

During the monsoon season (JAS 2022), weak La-Niña conditions and negative phase of IOD is expected. Based on the global and regional circulation patterns, the outlook for monsoon 2022 in Pakistan is as under:

Seasonal Outlook:

Overall, a tendency for above normal precipitation is likely over the country during forecast season (JAS). Monsoon onset is expected during the last week of June whereas pre-monsoon rains may occur from second week of June. Monsoon rainfall is expected to be above normal over Punjab and Sindh whereas slightly above normal rainfall is expected over remaining parts of the country. First phase (1st July to mid-August) of monsoon is expected to be wet as compared to the last phase (mid-August to end of September).

Area weighted **normal rainfall** of Pakistan during Jul – Sep is **140.8 mm**.

Impacts:

- Possibility of extreme hydro-meteorological events over catchment areas cannot be ruled out, that may generate riverine floods in the major rivers.
- Heavy rainfall events may trigger flash flooding in hilly areas and urban flooding in plain areas i.e. major cities of Sindh, Punjab, AJK and KP during the season.
- Above normal temperatures in high altitudes are likely to increase rate of snowmelt in the Northern Areas subsequently increasing the chances of base flow in the Upper Indus basin.
- Sufficient water availability for irrigation and power sectors will be a good impact.

South Asian Climatic Outlook Forum (SASCOF-22)

Normal to above normal rainfall is most likely during the 2022 southwest monsoon season (June – September) over most parts of the South Asia. Geographically, abovenormal rainfall is most likely along the foot hills of Himalayas, many areas of northwestern and central parts of the region, and some areas of east and southern parts of the region. However, below normal rainfall is most likely over some areas of extreme north, northwest, and south, and southeastern parts of the region. The seasonal rainfall is most likely to be normal or of climatological probabilities over the remaining areas of the region.

During the season, above normal minimum temperatures are likely over many areas along foothills of Himalayas, northern, northwestern and northeastern parts of the South Asia. Below normal to normal minimum temperatures are most likely over most areas of central, southern and southeastern part of South Asia. The seasonal minimum temperatures have climatological probabilities over remaining parts of the region. The seasonal maximum temperatures are most likely to be normal to below normal over most parts of the region except over extreme northwest and some areas of northern and northeastern parts of the region. Maximum temperatures have climatological probabilities over remaining parts of the region **(Annex-K)**.

1.9 MONSOON 2022 PREPAREDNESS CONSULTATIONS

The monsoon preparedness was initiated in the Month of February. Detailed guidelines were shared with the District Administration and line departments with the request to prepare the District Contingency Plan 2022 keeping in view the guidelines shared.

Moreover, during multiple meetings held in May 2022, the District Administrations were also sensitized for Monsoon 2022 preparations. Accordingly, all the district administrations prepared comprehensive District Monsoon Contingency Plan and shared the same with this Authority. Subsequently, the Provincial Monsoon Contingency Plan 2022 has been prepared in-line with the data provided by the District Administrations.

CHAPTER – 2

POSSIBLE IMPACTS OF FLOODS & HEAVY RAINS AT DIVISION

2.1 SCENARIOS

The Scenario has been considered for the purpose of calculating caseloads for the Provincial Contingency Plan as under:

2.1.1 LIKELY SCENARIO

While the possibility of riverine floods, flash flooding and urban flooding cannot be ruled out, keeping in view the Monsoon Outlook issued by Pakistan Meteorological Department which indicates that overall, a tendency for above normal precipitation is likely over the country during forecast season (JAS). Monsoon rainfall is expected to be above normal over Punjab and Sindh whereas slightly above normal rainfall is expected over remaining parts of the country. Moreover, the anticipated caseload has been prepared based on the recent monsoon experiences of high temperatures being experienced in pre-monsoon coupled with isolated heavy rains, causing possibility of riverine / flash floods and urban flooding in urban centres.

Therefore, the caseload is primarily based on anticipated displacement from low lying areas and katcha areas.

2.1.2 WORST CASE SCENARIO

The Monsoon Disasters during recent decade has almost affected whole Province of Sindh which reflects that worst scenario could be a combination of isolated heavy rains in upper and lower catchment areas. High releases of water from Dams coupled with heavy falls over hills. Such a scenario can never be ruled out and the population affected could be 30-40% of the total population of the province with almost all of the districts affected.

2.2 OVERVIEW OF DIVISIONAL PLAN

2.2.1 LARKANA DIVISION

Larkana Division is prone to both Riverine and Flash Floods, 02 out of 05 Districts .i.e. Jacobabad and Kamber are prone to Flash Floods due to water gushing from hill torrents of Baluchistan, whereas Larkana Kashmore and Shikarpur are prone to Riverine floods.

Fig. 3 Map of Larkana Division

The plans anticipated the likely caseload based on the population to be possibly affected due to riverine and flash flooding. The anticipated vulnerable population is **44,215** (approx.: 7369 families) in likely scenario case of Larkana Division. The caseload is calculated on 5.5% of the total population of Katcha area and 0.5% of flash flood areas i.e. Kambar and Jacobabad.

District	Likely
Larkana	10,850
Kambar	7,488
Kashmore	10,107
Shikarpur	10,150
Jacobabad	5,619
Total Pop:	**44,215**
Total Families	**7,369**

Early warning system has been specified and safe evacuation sites have been identified along with evacuation plans for vulnerable districts in accordance to their vulnerability. Moreover, an elaborated coordination mechanism has been worked out in which roles and responsibilities of government departments/ offices have been identified in detail. Various committees have also been constituted at district level.

However, preparations are based on worst case scenario in the light of experiences and lessons learnt from unprecedented floods and heavy monsoon rainfalls witnessed in the past.

2.2.2 SUKKUR DIVISION

The entire Sukkur Division is prone to Riverine Floods. All Districts of the Division are highly prone to Riverine floods due to passage of River Indus.

Fig. 4 Map of Sukkur Division

The plans anticipated the likely caseload based on the population to be possibly affected due to riverine floods. The anticipated vulnerable population is 40,771 (approximately 6,795 families) in likely scenario case of Sukkur Division. The caseload is calculated on 5.5% of the total population of Katcha area.

District	Likely
Sukkur	14,958
Khairpur	13,950
Ghotki	13,005
Total Pop:	**41,913**
Total Families	**6,986**

Early warning system has been specified and safe evacuation sites have been identified along with evacuation plans for vulnerable districts in accordance to their vulnerability. Moreover, an elaborated coordination mechanism has been worked out in which roles and responsibilities of government departments/ offices have been identified in details. Various committees have also been constituted at district level.

However, preparations are based on worst case scenario in the light of experiences and lessons learnt from unprecedented floods and heavy monsoon rainfalls witnessed in the past.

2.2.3 HYDERABAD DIVISION

The Hyderabad Division is prone to multiple monsoon hazards i.e. riverine, flash, urban and LBOD floods.

- Hyderabad District is prone to both Riverine and Urban Flooding;
- Dadu and Jamshoro are prone to Riverine and Flash Flooding (identified vulnerable areas may be perused at **Annex-D1**) ;
- Thatta, Sujawal, Matiari and Tando Muhammad Khan District are prone to Riverine
- Low lying areas of Tando Allahyar district is prone to Urban Flooding.
- Badin is prone to LBOD flooding

The plans anticipated the likely caseload based on the population to be possibly affected due to riverine flooding. The anticipated vulnerable population is **97,966** (approximately 16,328 families) in likely scenario case of Hyderabad Division. The caseload is calculated on 5.5% of the total population of Katcha area and 0.5% of total population of Badin and Tando Allahyar vulnerable to heavy rains.

District	Likely
Hyderabad	7,419
Dadu	8,240
Jamshoro	15,998
Matiari	15,054
Thatta	17,449
T.M Khan	5,144
Sujawal	13,500
Tando Allahyar	4,804
Badin	10,358
Total Pop:	**97,966**
Total Families	**16,328**

Early warning system has been specified and safe evacuation sites have been identified along with evacuation plans for vulnerable districts in accordance to their vulnerability. Moreover, an elaborated coordination mechanism has been worked out in which roles and responsibilities of government departments/ offices have been identified in detail. Various committees have also been constituted at district level.

However, preparations are based on worst case scenario in the light of experiences and lessons learnt from unprecedented floods and heavy monsoon rainfalls witnessed in the past.

2.2.4 SHAHEED BENAZIRABAD DIVISION

The Shaheed Benazirabad division is a new division recently notified by the Government of Sindh. Three districts constitute this new division i.e. Shaheed Benazirabad, Sanghar and Naushahro Feroze districts.

Shaheed Benazirabad and Naushahro Feroze districts are prone to riverine flooding and Sanghar district is prone to LBOD Flooding.

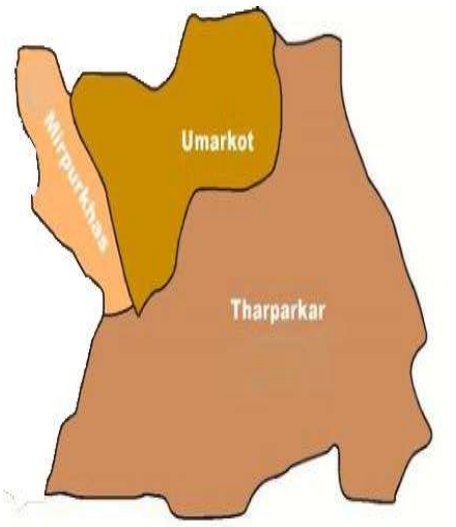
The plans anticipated the likely caseload based on the population to be possibly affected due to riverine flooding. The anticipated vulnerable population is **37,590** (approximately 6,265 families) in likely scenario case of Shaheed Benazirabad Division. The caseload is calculated on 5.5% of the total population of Katcha area and 0.5% of total population of Sanghar being prone to LBOD flooding.

District	Likely
Shaheed Benazirabad	10,004
Naushahro Feroze	15,777
Sanghar	11,808
Total Pop:	**37,590**
Total Families	**6,265**

Early warning system has been specified and safe evacuation sites have been identified along with evacuation plans for vulnerable districts in accordance to their vulnerability. Moreover, an elaborated coordination mechanism has been worked out in which roles and responsibilities of government departments/ offices have been identified in details. Thus various committees have also been constituted at district level.

However, preparations are based on worst case scenario in the light of experiences and lessons learnt from unprecedented floods and heavy monsoon rainfalls witnessed in the past.

2.2.5 MIRPURKHAS DIVISION



The Mirpurkhas division comprises of three districts namely i.e. Mipurkhas, Umerkot and Tharparkar.

All three districts of Mirpurkhas division are prone to Heavy Rains, which was also witnessed in monsoon-2020.

The plans anticipated the likely caseload based on the population to be possibly affected due to heavy monsoon rains. The anticipated vulnerable population is **24,825** (approximately 4,048 families) in likely scenario case of Mirpurkhas Division. The caseload is calculated on 0.5% of the total population.

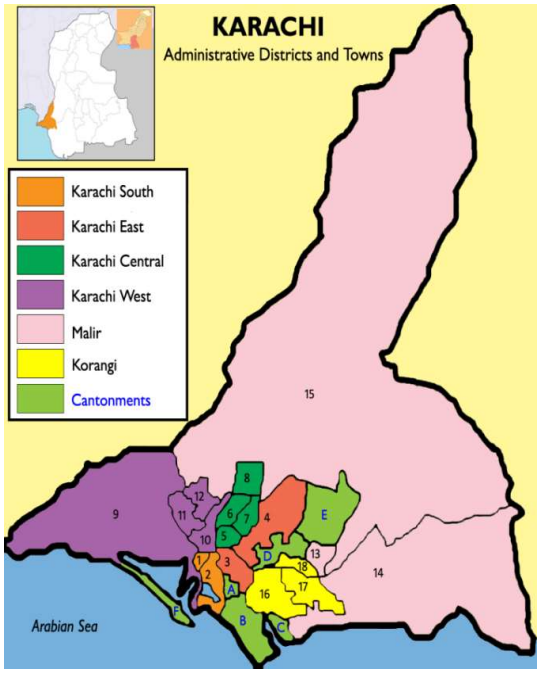
District	Likely
Mirpurkhas	8,656
Umerkot	6,160
Tharparkar	9,470
Total Pop:	**24,825**
Total Families	**4,048**

Early warning system has been specified and safe evacuation sites have been identified along with evacuation plans for vulnerable areas in accordance to their vulnerability. Moreover, an elaborated coordination mechanism has been worked out in which roles and responsibilities of government departments/ offices have been identified in details. Thus various committees have also been constituted at district level.

However, preparations are based on worst case scenario in the light of experiences and lessons learnt from unprecedented heavy monsoon rainfalls witnessed in the past.

2.2.6 KARACHI DIVISION

The Karachi is the Mega City of Pakistan with a population of approx: 16 million (as per census 2017) and is the Industrial Hub. The entire Division is prone to Urban Flooding as witnessed in some areas during 2017 & 2020. The two Rivers namely River Malir and River Lyari flow through the division.



Karachi division and surroundings are criss-crossed by many Nallahs which generally flow from North East to South West. These Nallahs act as Natural drains and carry storm water from Kirthar Range down till sea. The major rivers in the area are Malir River in the East and Layari River in the West, which further have their own small tributaries (Nallahs), which originates from Khirthar Range, as identified which caused flooding in Karachi Division. Based on the experience of urban floods of 2013, 2017, and 2020, it can be generally concluded that the drainage of Karachi is dependent on three Rivers/ Nallahs, which may cause Flooding, due to overflow. These are Malir River in the East, Wateen Wari Nallah in the middle and Layari River in the West. The population is **128,997** (approximately 21,500 families) in likely scenario case of Karachi Division. The caseload is calculated on 0.7% of the total population.

District	Likely
East	23,366
West & Keamari	31,461
Malir	16,144
Korangi	19,746
Central	23,881
South	14,399
Total Pop:	**128,997**
Total Families	**21,500**

In order to mitigate and minimize the impacts of urban flooding, it is important to take pre-emptive measures such as:

1. All agencies mandated to ensure smooth flow of drains and Rivers needs to de-silt and clean the water passage.
2. There is a dire need to remove encroachment and permanent settlements at Nallahs and Rivers as this has been a major hurdle / obstruction witnessed during rains, resulting in increased possibility of urban flooding
3. The situation during recent urban flooding in Karachi worsened due to electricity failure at Pumping stations. In order to avoid similar situations in future it is important that K-electric ensure un-interrupted supply of electricity along with provision of alternate in case electricity failure.
4. Establish strong coordination mechanism among multiple stakeholders so that the emergency can be handled amicably. Especially in Karachi where there are more than 16 territories under control of different stakeholders.
5. All future constructions should be made as per the master plan so that encroachments and illegal settlements can be avoided resulting in minimizing the impacts of urban flooding.
6. All civic agencies should ensure availability and functionality of de-watering pumps along with its operators as well as its placement at vulnerable points.

2.2.7 EXPECTED CASELOAD IN LIKELY SCENARIO

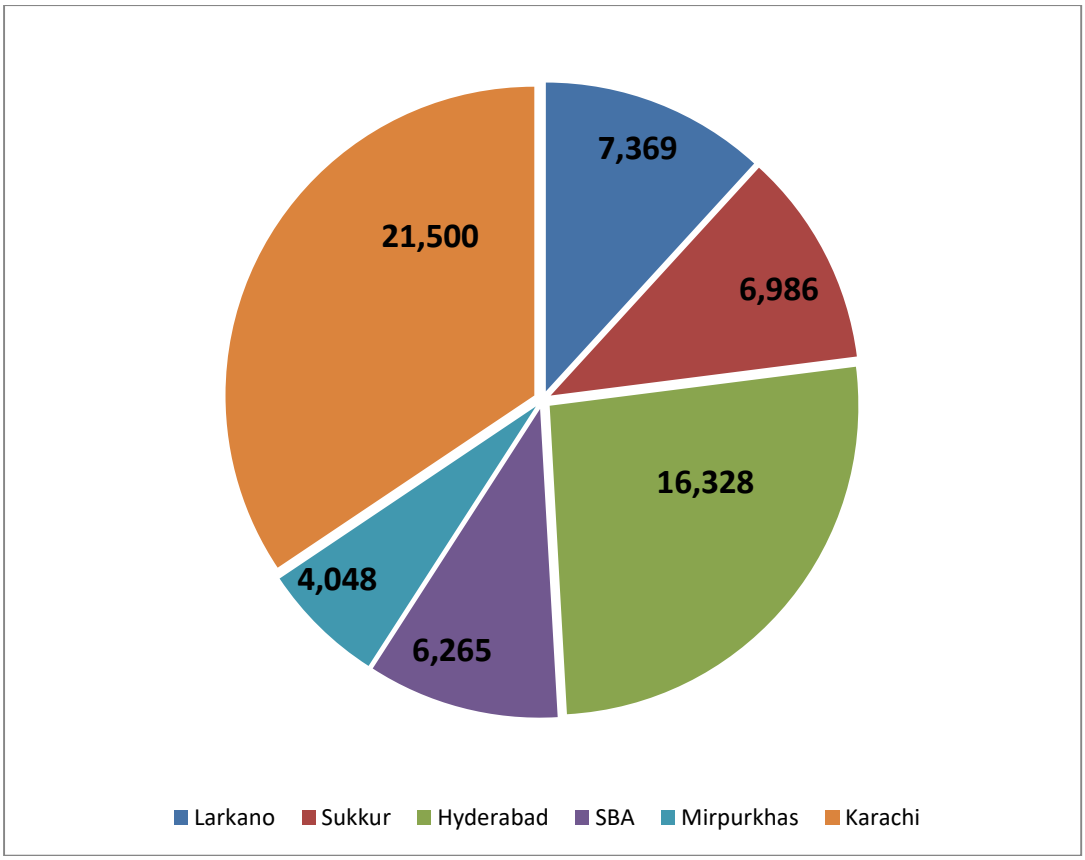


Fig. 9 Caseload in Likely Scenario

2.3 PLANNING PARAMETERS

Preparedness measures have been made/ carried out in the light of following observations:

- Possibility of heavy rain induced emergencies, especially due to hill torrents from Koh-e-Suleman and Khirthar range cannot be ruled out.
- Level of preparedness of flood protection structure, as indicated by Irrigation Department has improved manifolds.
- Level of preparedness of Disaster Management Authorities, especially of Districts that are vulnerable to floods / urban flooding have been improved through capacity building programs.
- Division / Districts are expected to meet the needs of their respective caseloads, for the likely scenario from within their own resources. PDMA, Rehabilitation Department, Government of Sindh and other agencies will

facilitate in generating additional resources in case the magnitude of disasters exceeds local capacities.

- The contingency planning will cater for the humanitarian needs of the affected population for four weeks i.e. the time required to mobilize additional resources, if needed.
- The preparatory measures on DRR, undertaken so far, are likely to considerably reduce / mitigate the likelihood of floods and its adverse consequences.

2.4 STOCKING LEVELS NEED AND GAP ANALYSIS FOR RELIEF

The gap for Relief has been calculated on the basis of Relief Stores available with PDMA, Rehabilitation Department, Government of Sindh on the onset of Monsoon 2022. The following relief stores will be available with PDMA, Rehabilitation Department, Government of Sindh.

2.4.1 LIKELY SCENARIO

Caseload 62,496 families

S. NO.	Items	Available	Approx. Need	Gap
1	Shelters/Tents	70,738	62,496	-
2	Food Baskets	-	as per demand	-
3	Mosquito Nets	103,841	187,488 (3x per family)	83,647
4	Blankets	33,805	124,992 (2x per family)	91,187
5	Jerrycan	65,542	62,496	-
6	Tarpaulin Sheets	34,511	62,496	27,985
7	Plastic Mat / Chatai	3,534	62,496	58,962

Inventory of stocks available with PDMA, Rehabilitation Department, Government of Sindh and the other relief items / heavy machinery, earth moving equipment held by Districts Administrations are at **Annex- B and C** respectively.

2.5 URBAN FLOODING

Urban Flooding is caused by heavy downpour due to sudden cloudburst, high density of population, large impervious areas, clogging of drainage systems resulting in loss of high economic values of properties and infrastructures, etc. Impacts due to urban floods are significant but not limited to in terms of economic losses both direct and indirect, it further causes physical, economic, social and environmental damages. Damages in urban context are more complex. In addition to the vulnerability, the magnitude of the damage depends on the flood type especially in terms of depth, flow velocity and duration. One of the major factors for the rise in urban flood damages is simply the increasing number of population and assets that are physically exposed to floods in cities. Cities in many developing countries are growing rapidly. Unprecedented migration from rural areas to cities has led to uncontrolled urban sprawl with increasing human settlements, industrial growth and infrastructure development. Often, urban growth in flood plain expands over some flood ways, hence reducing its flood drainage capacity which can be witnessed specially in Karachi, where most of the nallahs and rivers are encroached.

2.5.1 URBAN FLOODING IN SINDH

The Sindh Province consist of 12 Urban Districts/Cities which are Karachi East, Karachi West, Karachi South, Karachi Central, Karachi Keamari, Karachi Malir, Karachi Korangi, Hyderabad, Mirpurkhas, Sukkur, Shaheed Benazirabad and Larkano. The identified vulnerable points of urban districts / cities are placed at **Annex-D**. The sudden heavy downpour in these cities can turn the rains into urban flooding which was observed in Karachi division whose surroundings are covered by many Nallahs which generally flow from North East to South West. These Nallahs act as Natural drains and carry storm water from Khirthar Range down till sea. The major rivers in the area are Malir River in the East and Lyari River in the West, which further have their own small tributaries (Nallahs), which originates from Khirthar Range, as identified which caused flooding in Karachi Division. Based on the experience of recent urban floods, it can be generally

concluded that the Drainage of Karachi is dependent on Rivers/ Nallahs, which may cause Flooding, due to overflow.

2.5.2 MAJOR CAUSES OF URBAN FLOODING IN SINDH

- Heavy Rainfall / Flash floods Water concentrates and flows quickly through urban paved area and impounded in to low lying area raising the water level.
- Silting of the drains carry large amounts of sediments and deposited in the lower courses making beds shallower thus channel capacity is reduced.
- Poor Water and Sewerage Management / Old drainage and sewerage system.
- Lack of attention to the nature of hydrological system.
- Lack of flood control measures.
- Multiple authorities in a city but owning responsibility by none.
- Non-functioning of De-watering machines installed at major junctions.

2.6 BROAD CONTOURS OF THE PLAN

Respective DDMAs, backed by PDMA, Rehabilitation Department, Government of Sindh would be the first responders in case of flood situation.

- Early warning of approaching weather system will be provided by PMD/ FFD and communicated to all concerned by DDMAs. DDMAs are expected to translate weather forecast and flood warnings into usable early warning for vulnerable communities and ensure its timely dissemination to all concerned.

- In case, there is continuous rise in river water level, the people residing in Katcha Areas will be evacuated to the safer places, which is estimated to be 2.6 million as of the report of 2014. The details are at **Annex – E.**

- Threatened population will be evacuated by DDMAs as per prepared plan.

- DDMAs would be responsible for provision of search and rescue, medical and emergency responses.

- Camps will be established at pre-selected sites by DDMAs.

- All Division / Districts must be ready to handle the initial caseloads within their own mechanism and resources.

- DDMAs would be responsible for effective and transparent relief distribution including relief provided by PDMA, NDMA and other Humanitarian Agencies.

- All stakeholders would take necessary actions to facilitate early recovery and rehabilitation of affected population.

- In case, the districts fall short of meeting the humanitarian needs, PDMA, Rehabilitation Department, Government of Sindh will assist by making available the required stocks. In case, when disaster exceeds capacities of the Provincial Government, NDMA will be requested to make available the additional stocks from national reserves, prepositioned across the Country.

- When required, Armed Forces may be requested for assistance by PDMA, Rehabilitation Department, Government of Sindh at any stage, particularly for rescue, evacuation and emergency relief phases. Thus, the DDMAs will have to submit the request to PDMA, Rehabilitation Department, Government of Sindh for assistance of armed forces in aid of civil administration.

- Special requirements of Aviation / Naval support by any agency will be coordinated by PDMA, Rehabilitation Department, Government of Sindh.

- Resources of Government Departments and Agencies such as, Pakistan Red Crescent Society and domestic philanthropy may be requisitioned, if the intensity of the situation so entails for an effective response.

CHAPTER-3

COORDINATION MECHANISM

PDMA, Rehabilitation Department, Government of Sindh will coordinate with key National Stakeholders including PMD, FFC, Armed Forces, Federal Agencies, DDMAs and Line Departments for management of the entire spectrum of Provincial Disaster Response. System of coordination of PDMA, Rehabilitation Department, Government of Sindh is depicted below.

3.1 MITIGATION

3.1.1 MINISTRY OF WATER AND POWER

The ministry is responsible for the overall flood management and impact mitigation efforts through its attached departments (FFC, WAPDA, PCIW and IRSA). The Ministry deals with monitoring of preventive and preparedness measures as well as resource allocation for the protection works.

Federal Flood Commission implements Flood Risk Mitigation Projects which include flood protection works as well as flood forecasting/ warning system improvements. As part of preparedness measures for Monsoon Season. FFC undertakes the following:-

- Countrywide monitoring of flood works.
- Comprehensive Flood Management Plan for 10 years initiated.
- In case of Exceptionally High Floods, parts of the discharges are managed by breaching the bunds on the pre-determined sites for safety of the main Hydraulic Structures (Bridges & Barrages) and main cities.

3.1.2 WATER & POWER DEVELOPMENT AUTHORITY

WAPDA reinforces floods impact mitigation through operational management of major water reservoir i.e. Tarbela, Mangla Dams and Chashma

Barrage. It strengthens national flood early warning system through deployment of flood telemetry system.

3.1.3 INDUS RIVER SYSTEM AUTHORITY (IRSA)

IRSA defines the dam/water storage and release policy as part of its mandate during the Rabi and Kharif season.

3.1.4 IRRIGATION DEPARTMENT

It undertakes implementation of flood protection works, monitor flow in flood prone rivers and water channels, reinforce floods early warning and execute technical responses, O&M of existing flood protection infrastructure besides restoration and repair of damaged flood protection works.

3.2 EARLY WARNING

3.2.1 PAKISTAN METEOROLOGICAL DEPARTMENT (PMD)

PMD has a broad mandate of supporting agro-based economic activities, air and maritime traffic safety, disaster mitigation efforts and disseminating weather forecast to numerous end users. PMD will ensure the following during monsoon season:

- Inform public on the weather forecast and issue warning in case of potential threat.
- Collect rain data on a regular basis, consolidate and share it with all concerned.
- Disseminate flood information to the NDMA/ PDMA on a daily basis during flood season.
- Share weather forecasts and early warning information with NDMA, FFC PDMAs, and the Media on a regular basis in the monsoon period.

- Coordinate with FFC, WAPDA, PCIW, FFD, and SUPARCO in the Monsoon period to generate flood warning where wanted.

3.2.2 FLOOD FORECASTING DIVISION (FFD)

FFD is an affiliated organization of PMD. It disseminates flood early warning and river flow updates to relevant National, Provincial and District Governments and National Response Agencies, especially in the context of Monsoon Season.

3.2.3 PAKISTAN SPACE & UPPER ATMOSPHERE RESEARCH COMMISSION (SUPARCO)

SUPARCO deploys its satellite imagery capacities for disaster impact mitigation and also for early warning of disaster occurrence and trends monitoring. SUPARCO will play the following role during monsoon season:-

- Provide remote sensing and satellite maps before and during disasters in order to show their impact.
- Provide remote sensing and satellite maps for hazard risk zones to enable relevant agencies to take measures for minimizing damage to population and property.
- Assist post-disaster damage assessment.

3.3 RESPONSE AGENCIES (FEDERAL GOVERNMENT)

3.3.1 NATIONAL DISASTER MANAGEMENT AUTHORITY (NDMA)

- National Emergency Operation Center (NEOC) is activated in NDMA, Islamabad for monitoring of the situation and coordination of possible response during monsoon season 2022 on 24/7 basis. The NEOC will always be manned by a Duty Officer who functions under the overall supervision of Director (Response), NDMA.

- Coordinates emergency response of the Federal Government in the event of a National level Disaster through the NEOC.

- Require any Government Department or Agency to make available such staff or resource that are available for the purpose of emergency response, rescue and relief.

- Organize initial and subsequent assessment of disaster affected areas and determine the extent of loss/damage and volume of relief required.

- Coordinate and inform all concerned Department to get prepared for emergency response.

- Coordinate with Armed Forces, INGOs, UN Bodies and Philanthropist Organizations for resource mobilization.

- Mobilize and deploy resources e.g. search and rescue medical teams in the affected areas.

- Supply of food, water, medical supplies and NFIs to the affected population.

- Prepare a transition plan from relief to recovery program.

3.3.2 ARMED FORCES

The Armed Forces mobilize and deploy resources when called upon by District / Provincial / National DMAs and provide assistance in Search and Rescue, Evacuation, Camps Establishment and Management, provision and distribution of relief to the affected populations and provision of emergency medical services. The flood control centers will also be established from 15th June, 2022. Army, Pakistan Navy and Pakistan Air Force, which will also share information on resource deployment and flood management with respective PDMAs/ NDMA on daily basis. The summary of flood relief equipment of Government of Sindh available with HQ Corps 5 is at **Annex- F.**

3.3.3 PAKISTAN COAST GUARDS

Pakistan Coast Guards augment coastal search & rescue and relief operations on required basis.

3.3.4 NATIONAL HIGHWAYS AUTHORITY (NHA)

NHA is responsible for building and maintaining highways and motorways in Pakistan. It ensures road access during monsoon season.

3.3.5 PAKISTAN RAILWAYS

Pakistan Railways is an important organ which ensures access during monsoon season. To deal with a possible flood Situation, Flood Emergency Centers will be established as usual in 7 – operating Divisions of Pakistan Railways (Peshawar, Rawalpindi, Lahore, Multan, Sukkur, Quetta and Karachi).

3.4 RESPONSE AGENCIES (PROVINCIAL GOVERNMENT)

3.4.1 PROVINCIAL DISASTER MANAGEMENT AUTHORITY, REHABILITATION DEPARTMENT, GOVERNMENT OF SINDH

Pre-Disaster

- The Director General PDMA, Rehabilitation Department with consultation, control and supervision of the Secretary to Government of Sindh, Rehabilitation Department Sindh or on his directives will lead the composite team to coordinate response and relief after seeking approval from Secretary, Rehabilitation Department Sindh.
- Provincial Emergency Operation Centre has been made operational from the 2nd week of June 2022, so as, to make all arrangements for receiving forecast data from PMD and its dissemination.
- The PEOC will be functional till the termination of monsoon season / emergency.
- The PEOC shall receive and transmit flood/ water level information thrice in flood season and on hourly basis during emergency.
- Identification of available resources i.e. machinery, tents etc., and Gaps.
- Contingency planning as to identify role of each stakeholder during emergency.

- Ensuring coordination between line departments & other stakeholders for any emergency, through workshops, trainings tec.
- Assisting DDMAs in provisions of adequate required resources for monsoon season.
- An inventory of NGOs working in these areas will be prepared prior to the crisis, in order to mobilize them quickly in case of emergency.

During-Disaster

- The coordination and collection of information and resources to support disaster/emergency incident management activities.
- The PEOC will be a central coordination, command and control facility responsible for carrying out emergency preparedness and emergency management functions at a strategic level in an emergency situation, and ensuring the continuity of response operations.
- Tents, Plastic Sheets, Mosquito Nets, De-watering Pumps, Water Purifying Filters, Jerry Cans and boats, are being procured to be placed at the disposal of DDMAs.
- The PDMA, Rehabilitation Department, Government of Sindh will arrange the transportation of food and other relief items to the Flood Displaced Persons (FDP) for further distribution. District Administration will be requested to distribute the relief goods.
- PDMA, Rehabilitation Department, Government of Sindh shall undertake need based coordination with all UN agencies and other humanitarian partners to fill in the response and relief gaps before, during and after floods.
- PDMA, Rehabilitation Department, Government of Sindh has coordination with all UN agencies and humanitarian partners to maintain a stock (food and NFI including shelter).
- Prepare daily situation reports and circulate to all concerned as per **Annex- G.**

Post-Disaster

- The PDMA, Rehabilitation Department, Government of Sindh in collaboration with partners will have to closely monitor the situation on regular basis. Logistic arrangement should be done in advance keeping in view the positions available in the case of crises. An initial rapid assessment will be carried out to identify the areas and targeted beneficiaries.
- Continue with relief and early recovery operation till affected people are settled back to their original abode and economic activity is resumed.

3.4.2 DISTRICT DISASTER MANAGEMENT AUTHORITY

- DDMAs shall activate District Emergency Operation Centers (DEOCs)
- In the event of a disaster, organize emergency response through the District Emergency Operation Center (DEOC)
- Setup early warning mechanisms and dissemination of proper information to public, prepare district level response, plans and guidelines, establish stockpiles of relief and rescue material; provide information to PDMA, Rehabilitation Department, Government of Sindh on different aspects of Disaster Management.
- Inform / update PDMA, Rehabilitation Department, Government of Sindh regarding the overall situation.
- Organize evacuation on priority basis.
- Conduct initial and subsequent assessment of disaster affected areas and determine the extent of loss and damage.
- Collect information on damage status and promptly plan for the resources requirement for relief operation and share it with the PDMA, Rehabilitation Department, Government of Sindh.
- Provide food, drinking water, medical supplies and NFIs to the affected population

- Preferably set up tent cities/ relief camps on open land and provide relief to the affectees in camps **(Annex-I).**
- Coordinate with PDMAs to deploy resources for emergency response.
- Mobilize community volunteer groups and civil defence for emergency operations.
- Forward timely situation reports (SITREP) and Rainfall Report (as per **Annex-G** & **Annex-H** respectively) on daily basis to PDMA, Rehabilitation Department, Government of Sindh for its timely dissemination to concerned quarters.
- Ensure registration of all relocated population in the camps and overall affected population on gender segregated basis.
- Prioritize vulnerable segments of society in their relief operations.
- Facilitate early return of relocated population and help in restoring their livelihoods.

3.4.3 HEALTH DEPARTMENT

Pre-Disaster

- Training of 1122 Ambulance staff (where available in Sindh) for rescue operations during disaster / emergencies
- Provide specific information required regarding precautions for epidemics
- Establish a health mobile team in district & town headquarter hospital
- Setup an Information Center to collect and share information amongst relevant stakeholders.
- Collaboration with relevant organizations/partner NGOs.
- Stocking of life saving drugs and vaccines.

During-Disaster

- Ensure effective usage of 1122 Ambulance Service for rescue and response
- Providing emergency treatment to the affected
- Provision of First-aid & water testing kits, chloramines and anti-snake venom serum & other emergency support

- Deployment of mobile medical teams & health staff
- Collaboration with all relevant stake holders

Post Disaster

- Establishment of medical camps, vaccination, ensuring safe food & water in camps
- Conduct impact assessment on health, intervene to stop outbreak of diseases
- Rehabilitation of health infrastructure

3.4.4 EDUCATION DEPARTMENT

Pre-Disaster

- Providing the necessary information, training to teachers & students regarding disasters with tips to save their families & themselves during disaster.
- In collaboration with Civil Defence and Boy Scouts / Girl Guides Association and gear up the volunteers force.
- Educate students about Health care Precautions

During-Disaster

- Mobilize the human resources for intervention during disaster
- Arrangement for evacuees to setup relief & temporary shelter camps
- Deployment of volunteers for camp management & emergency support

Post-Disaster

- Assessment of damages & needs of affected educational institutes
- Rehabilitation of affected educational institutes
- Continuing Education of children at camps and helping them to recover from shock by providing toys etc.

3.4.5 AGRICULTURE DEPARTMENT

Pre-Disaster

- Assessment of high risk prone areas and estimation of possible damage
- Create community Seed Bank at UC level
- Regular surveillance of Irrigation water supplies
- Close coordination with Meteorological Department & other stakeholders for weather information.
- Testing, functioning and pre-positioning the available machinery.

During-Disaster

- Immediate mass awareness and update of situation
- Arrangements for relief & temporary shelter camps in canal rest houses
- Vigilance for protection of Agriculture crops.
- Immediate activation of machinery and equipment.

Post-Disaster

- Assessment of damages & needs of affected crop area and submit to DDMA
- Assistance in repair & rehabilitation of Irrigation Systems.
- Timely compensation to affected farmers
- Mass awareness campaigns regarding epidemics & diseases to crops
- Inform the affected population regarding the land use and crop management on damaged / devastated areas.

3.4.6 LIVESTOCK AND FISHERIES DEPARTMENT

Pre-Disaster

- Estimation of possible damage
- Mass Awareness regarding precautions

- Close coordination with Agriculture, Irrigation, Meteorological Department & other stakeholders.
- Vaccination of livestock.
- Stocking of fodder and vaccines.

During-Disaster

- Update local communities of ongoing situation.
- Provide livestock vaccination
- Arrangements for relief & transportation of livestock.
- Provision of fodder for livestock in affected area.

Post-Disaster

- Assessment & submission of damages & need of affected livestock to DDMA
- Timely compensation to affected livestock owners
- Mass awareness campaign regarding epidemics & diseases to livestock

3.4.7 PLANNING & DEVELOPMENT BOARD

Pre-Disaster

- Gathering statistical data regarding possible damages & recovery needs from all relevant departments
- Plan & identify potential resources
- Facilitation to other department in planning

Post-Disaster

- Gathering statistical data regarding actual damaged & recovery needs from all relevant departments
- Plan & Identify potential resources
- Facilitation other departments in planning and execution of rehabilitation in cost effective manner
- Coordinate with all line departments

3.4.8 REVENUE DEPARTMENT

Pre-Disaster

- Assessment of high risk prone areas and estimation of possible damage and needs for recovery.
- Arrangement of financial resources.
- Identification of high grounds for establishment of tent cities.

During-Disaster

- Establish relief distribution centers/ camps and accept relief donation/ relief support
- Timely release of funds to DDMA.

Post-Disaster

- Assessment of damages of Industrial/ Business, Crops and Livestock and Settlement of applicable taxes accordingly
- Support PDMA, Rehabilitation Department, Government of Sindh in conduct of authentic damage assessment and compensation need.

3.4.9 POLICE DEPARTMENT

Pre-Disaster

- Information dissemination through "15 helpline Service" to local residents
- Prepare Contingency Plan, Teams & their training for emergency intervention.
- Deploying and give security cover to government agencies which are working / preparing for the monsoon season in areas where Law and Order is not good.

During-Disaster

- Rescuing affected, shifting, to hospitals and corpse disposal
- Providing easy access & security to rescue & relief teams.
- Maintain law & order and divert traffic on alternative safe routes as and when necessary.
- Maintaining Law and Order and provide security to relief stock piles and camps.

Post-Disaster

- Ensure security to workers of NGOs/INGOs
- Provide security in Un-safe areas
- Facilitation to institutions/NGOs/INGOs which focus on rehabilitation activities.

3.4.10 CIVIL DEFENCE

Pre-Disaster

- Information sharing regarding technical and personnel expertise with PDMA, Rehabilitation Department, Government of Sindh and DDMAs.
- Conduct training for volunteers in first aid & other activities
- Effectively train & mobilize volunteers and initiate mass awareness regarding necessary first aid-rescue activities

During-Disaster

- Deployment of volunteers at the disposal of DDMA for Rescue, Evacuation and initiate basic first aid.
- Communicate to DEOC any additional resources required for performing Rescue and Evacuation Activities
- Taking precautionary measures to stop Fire-incidents in camps and perform Fire fighting in emergency.
- Management of relief camps where required.

Post-Disaster

- Identify gaps, make future plan to overcome weaknesses
- Assisting District Administration and other Line Departments in Rehabilitation works

3.4.11 SCOUTS

Pre-Disaster

- Nominate the Scouts District wise from Riverine Districts which can be trained to handle flood emergencies
- Training will be imparted in the Scouts regarding Boat Handling and first response to the affectees during the emergency.

During-Disaster

- Trained scouts will be deployed / placed at the disposal of Deputy Commissioner
- The Scouts will perform the duties as per training and will report to respective Deputy Commissioner

Post-Disaster

- The trained Scouts would continue to impart the training in other scouts and volunteers in their respective districts.

3.5 STANDARD OPERATING PROCEDURES (SOPs)

➢ All the departments shall immediately prepare a comprehensive and up-to-date Contingency Plan for combating expected heavy rains and carrying out the Rescue and Relief work including the details of available staff, vehicles, machinery equipments and other resource in close coordination with PDMA, Rehabilitation Department, Government of

Sindh. These all must be kept ready to mobilize / use to combat any emergency during the Monsoon season 2022.

- The Deputy Commissioners shall keep close liaison with all departments like Local Government, Health, Agriculture, Civil Defence, Irrigation, Works & Services, Education & Literacy, Police & other Law enforcement Agencies. Meetings in this regard are to be held on regular basis with concerned departments and minutes are to be shared with other Divisional Commissioners and PDMA, Rehabilitation Department, Government of Sindh.

- If there is likelihood of heavy rains and flood emergency would be declared in the District and all Government functionaries and NGOs would be kept on high alert.

- Control Rooms would be established at District and Taluka level in the offices of the Deputy Commissioners. Assistant Commissioner, Mukhtiarkars (Revenue) and all other line departments during the Rain/Flood emergency. These Control rooms shall function round the Clock.

- The Executive Engineers Irrigation will establish round the clock control rooms in their offices for making liaison with all concerned & activate contingency Plan of the department. They shall identify the vulnerable points of the LBOD Sim-Nalahs / and all other irrigation canals and intimate PDMA, Rehabilitation Department, Government of Sindh before 30th June. They will be in touch with PDMA, Rehabilitation Department, Government of Sindh and the Meteorological Department & inform the concerned agencies about any development emergency. They will make special arrangements for watching and patrolling of vulnerable points and ensure that embankments remain in stable condition.

- Immediate arrangements for necessary machinery, sand bags and other material to be used for strengthening of embankments of canals and plugging breach shall be ensured and availability of communication network must be made at all vulnerable points.

- The Executive Engineers Irrigation / LBOD shall ensure regular, timely

and proper de-silting of all canals, distributaries, drains, sub-drains and submit a certificate to his higher authorities with an information copy to PDMA, Rehabilitation Department, Government of Sindh.

- The Deputy Commissioners shall ensure activation of Central District Control Rooms and already established control rooms at each Mukhtiarkar (Revenue) Offices round the clock, under the supervision of Assistant Commissioner concerned. They shall also ensure preparedness at proposed relief camps and also ensure immediate evacuation of people residing in low-lying areas to safer place/ relief camps, if required. He shall also make immediate arrangements for the availability of sufficient quantity of relief Material like food, blankets, tents- plastic sheets etc.
- The Deputy Commissioners shall constitute Supervisory Committees for relief works at district level.
- The Deputy Commissioner must further ensure that special attention is given to the disabled people and women and children and extra ordinary measures are taken for such purpose.
- The Deputy Commissioner shall nominate the Assistant Commissioner as focal persons to coordinate with the Taluka and Town level local councils for drainage of accumulated rain water during monsoon season-2022.
- The Assistant Commissioners of the sub-division/ Taluka shall be focal persons in Talukas for the entire operations of rescue and relief. They must ensure the respective arrangements for tractor trolleys and manpower in coordination with Civil Defence, Boy Scouts Association and Police Department if needed and mobilize the village staff in the pre-and-post emergency work. They shall also ensure proper distribution of relief material among the actual needy persons.
- The Executive Engineer Drainage Division (LBOD), Irrigation Department shall ensure availability of bulldozers, excavators and earthmoving machines in sufficient number .and in proper working and ready to use condition in case of emergency.

- The Director Agriculture shall make arrangement for protection of standing crops from damages and diseases that may be caused from the stagnant rainwater in the fields. He shall manage required machinery from mechanical wing and must have the inventory of such machinery and equipment.

- The Deputy District Officer, Animal Husbandry Livestock and his staff shall ensure safety of livestock from flood diseases and losses and Veterinary Officers shall ensure regular and timely vaccination of cattle in the districts. They shall make all necessary arrangements for fodder for the livestock to be shifted from marooned areas.

- The Deputy Controller, Civil Defence should ensure the enrolment of volunteers as early as possible in order to avoid any chaotic situation during emergency. He will continuously remain updated of weather forecast reports and with meteorological departments and will make arrangements for warnings in emergency situation through sirens, loudspeakers and media at Taluka and village level. He shall ensure presence of the Razakars / volunteers and scouts for rain relief and rescue activities in case of any emergency.

- The Deputy Director Food shall ensure availability of sufficient stock of wheat and other grains and shall coordinate with Deputy Commissioners for supply of ration/ food grains from local Food Grains dealers in case of need. He will also ensure that no stocks of government wheat, placed at depots, are damaged due to water accumulation, fire or rioting.

- The Executive Engineer K-Electric / HESCO / SEPCO, shall ensure that no case of electrocution occurs due to negligence of their respective departments and no loose wires are suspended from the electric poles. In case of any breaking of live electric wires immediate steps shall be taken for repair, Inspection of transformers.

- The Divisional Engineer Telephone, ensure full function-ability of telephones all over the district and provide assistance to all departments

on demand at the, time of need.

- The Zonal Manager Sui-Southern Gas company ensure continuous supply of gas and proper safety of gas lines throughout its network in the districts of his Division / Zone. He shall ensure immediate repair work in case of any damage to the gas lines.

- The Deputy Commissioners shall ensure mobilization of the NGOs and business community in the rescue and relief activities in case of emergency and shall depute volunteers on different emergency tasks.

- The Sindh Police and Rangers (Sindh) in coordination with concerned Deputy Commissioner and other law enforcement agencies will ensure law and order situation and will assist District Administration for sharing of information regarding causalities and affectees etc.

- The Regional Director, Information shall keep close liaison with all control rooms of the division to provide correct and exact information to media regarding emergency. He shall also arrange briefings about the latest situation in case of emergency.

- The Red Crescent Society and other welfare associations and NGOs of the district shall provide food packets and other required material to the affected persons in relief camps in case of emergency.

- Proper arrangement for lifting of trees fallen due to heavy rain and gusty winds from the main Highways / Roads shall be made by the Executive Engineer, Provincial. Highways department.

- The incharge Utility Store Corporation shall ensure the availability of sufficient stock of edible items in case of need.

- The Revenue Department shall also conduct the survey of any loss of life houses, cattle, standing crops and other infrastructure after the rains/ floods-2022. In case of the highest degree of emergency, Pakistan

Army may be requested for helping the district Administration in rescue and relief Operations.

3.6 IMPORTANT CONTACT NUMBERS

Annexed at L.

Annex – A

HISTORY OF PAST FLOOD EVENTS

Year	Deaths	Injured	Houses Destroyed	Houses Damaged	People Affected	Cattle Lost	Villages Affected
2013	47	43	14095	21400	534834	88	3068
2012	280	3687	116849	247851	3088970	849	12915
2011	462	756	608579	694519	8634995	104277	36008
2010	475	837	372089	245872	8065846	398769	13649
2008	40	29	3583	13026	0	219	0
2006	162	0	0	113475	1570881	5	95
2003	407	235	0	246464	831157	3618	3243
1995	114	0	21189	0	504455	1397	823
1994	264	0	129387	355554	690035	6090	7894
1992	232	0	239238	269085	0	66512	0
1988	8	0	0	16445	175000	25	1

ANNEX-B

MONSOON STOCK AVAILABLE AT PDMA WAREHOUSES

S.#	ITEMS	TOTAL
1.	Tents	70,738
2.	Water Purifier	1,732
3.	Blankets	33,805
4.	Mosquito Nets	103,841
5.	Animal Mosquito Nets	24,142
6.	De-watering Pumps	205
7.	Rescue Boats	62
8.	Life Jacket	3,330
9.	Plastic Mats/ Chatai	3,534
10.	Generators 3KVA	12
11.	Generators 6.5KVA	29
12.	Generators 35KVA	2
13.	Generator 100KVA	3
14.	Generator 50KVA	2
15.	Kitchen Sets	1,946
16.	Hygiene Kit	7,980
17.	Jerry Can	65,542
18.	Life Straw Purifier	3,072
19.	Life Ring	115
20.	Hand Fan	23,749
21.	Water Cooler	7,076
22.	Sleeping Bags	339
23.	Tarpaulin Sheets	34,511
24.	Portable Washroom	2,173
25.	Hospital Tent	26
26.	Pedestal Fan	2,776

Annex-C

Flood Fighting Equipment(FRE)/ Machinery Available with Districts

Division	District	De-watering Machine	Dumper	Buildozers / Dozers	Excavator	Fire Brigade / Engine/ Tender	Tractor / Trolley / Blade\	Vehicle / Bus/ Van/Truck/	loader	shawal	Diesel / Petrol Engine	Cess Pool	Water Tanker	Water Bozer	Ambulances	Crane
Hyderabad Division	Hyderabad	213	10	72	7	1	29	47	5	-	-	-	7	-	55	-
	Jamshoro	25	-	-	-	18	-	1	-	-	-	-	-	-	30	-
	Thatta	24	-	-	-	3	10	2	-	-	-	-	2	-	10	-
	Badin	-	2	1	5	-	9	86	-	-	-	-	-	-	26	-
	Dadu	24	-	-	-	6	11	-	-	-	-	-	-	-	-	-
	T.M Khan	56	1	-	-	2	1	-	1	-	-	-	-	-	12	-
	T. Allahyar	26	-	-	-	5	14	-	6	-	26	-	1	1	19	-
	Sujawal	21	-	-	-		96	-	-	-	-	-	-	-	-	-
	Matiari	33	-	-	-	1	4	1	4	-	-	-	4	-	16	-
Mirpurkhas	Mirpurkhas	40	-	-	-	7	16	-	-	-	-	-	-	-	-	-
	Tharparkar	48	-	-	-	10	5	13	-	-	-	-	36	-	29	-
	Umerkot	31	-	-	-	10	15	-	-	-	-	-	7	-	24	-
SBA	SBA	100	-	14	-	-	-	28	-	-	-	-	-	-	50	-
	Sanghar	81	-	-	-	7	25	-	-	-	-	-	-	1	-	-
	N. Feroze	78	-	4	-	10	28	50	-	-	72	-	3	-	41	-
Sukkur	Sukkur	5	-	1	22	15	35	11	9	-	-	-	-	1	19	-
	Ghotki	26	-	5	-	6	6	51	5	-	11	-	-	-	26	-
	Khairpur	3	9	-	1	17	22	13	10	-	-	-	5	2	62	1
Larkana	Larkana	32	1	13	-	3	18	10	-	-	20	-	2	2	4	-
	Kashmore	15	-	10	-	4	14	-	1	-	-	-	-	-	9	-
	Kamber	26	-	6	-	10	18	-	7	-	7	-	-	9	11	-
	Shikarpur	10	-	10	-	6	13	5	13	-	-	-	-	-	27	-
	Jacobabad	45	-	-	-	-	-	22	-	-	-	-	-	-	17	-
Karachi	East	5	2	-	-	-	-	3	5	-	-	-	2	-	-	-
	West	28	2	-	1	5	7	14	7	-	-	-	-	-	12	-
	Central	-	38	1	-	3	58	-	13	-	-	-	7	5	-	-
	Malir	4	6	-	4	-	-	-	-	1	-	-	-	1	-	1
	South	9	-	-	-	-	1	7	-	-	-	1	2	-	-	-
	Korangi	16	15	-	-	-	8	-	4	3	-	-	-	-	-	-
	Keamari	20	-	-	-	-	-	-	-	20	-	-	1	-	-	-

*** The Details of Machinery provided by Districts.**

District	Mech. Street Sweeper	Refuse Van	Garbage Van	Fumigation Machine	Riksha Container	Boats	Life Saving Jackets	Rope	Search Lights	Power Generators	Hygemic kit	First Aid Box	Sucker Machine	Plsastic Drums
Hyderabad	1	1	-	-	3	-	-	-	-	3	-	-	-	-
Jamshoro	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thatta	-	-	-	-	8	-	-	-	-	-	-	-	-	-
Badin	-	-	-	-	-	3	-	-	-	-	-	-	-	-
Dadu	-	8	-	-	-	-	-	-	-	-	-	-	-	-
T.M Khan	-	-	-	-	4	10	-	-	-	2	-	-	-	-
T. Allahyar	-	3	1	26	6	-	-	-	-	-	-	-	-	-
Sujawal	-	-	-	-	-	102	-	-	-	-	-	-	-	-
Matiari	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Mirpurkhas	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tharparkar	-	-	-	-	16	25	1,200	-	-	24	-	-	-	1,000
Umerkot	-	-	-	-	-	2	-	-	-	5	-	-	-	-
SBA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sanghar	-	5	-	2	-	-	-	-	-	2	-	-	-	-
N. Feroze	-	5	-	-	12	4	-	-	-	-	100	-	-	-
Sukkur	-	-	-	-	6	-	-	-	-	-	-	-	2	-
Ghotki	-	-	-	-	-	13	-	-	-	2	-	-	-	-
Khairpur	-	-	-	-	60	-	-	-	-	-	-	-	3	-
Larkana	-	1	-	-	-	52	10	2	5	-	-	10	2	-
Kashmore	-	2	-	-	-	1	-	-	-	-	-	-	1	-
Kamber	-	7	-	-	-	-	-	-	-	13	-	-	-	-
Shikarpur	-	-	-	-	5	-	-	-	-	-	-	-	1	-
Jacobabad	-	-	-	-	-	-	-	-	-	-	-	-	-	-
East	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Central	-	15	-	-	-	-	-	-	-	-	-	-	-	-
Malir	-	-	-	-	-	-	-	-	-	-	-	-	-	-
South	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Korangi	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Keamari	-	-	-	-	-	-	-	-	-	-	-	-	-	-

District	Tents	Water Filter	Electirc Motrs	Jerry Can	Electric Van	Arm Roll	Mono Block	Earth Levelers	Plastic Sheets	Succking Machine	Sprayers	Bobcat	Compactor
Hyderabad	-	-	-	-	-	-	-	-	-	-	-	-	-
Jamshoro	99	-	-	-	-	-	-	-	-	-	-	-	-
Thatta	-	-	-	-	-	-	-	-	-	-	3	-	-
Badin	-	-	-	-	-	-	-	-	-	-	-	-	-
Dadu	-	-	-	-	-	-	-	-	-	-	-	-	-
T.M Khan	-	-	-	-	-	-	-	-	-	-	-	-	-
T. Allahyar	-	-	2	-	-	-	-	-	-	-	-	-	-
Sujawal	-	-	-	-	-	-	-	-	-	-	-	-	-
Matiari	-	-	-	-	-	-	-	-	-	-	-	-	-
Mirpurkhas	-	-	17	-	-	-	-	-	-	-	-	-	-
Tharparkar	60,000	-	-	-	-	-	-	-	-	-	-	-	-
Umerkot	400	-	-	-	-	-	-	-	-	-	-	-	-
SBA	-	-	-	-	-	-	-	-	-	-	-	-	-
Sanghar	-	-	-	-	-	-	6	-	-	-	-	-	-
N. Feroze	-	100	117	100	-	-	-	-	23	-	1	-	-
Sukkur	-	-	-	-	-	-	-	1	-	-	-	-	-
Ghotki	-	-	14	-	-	-	-	-	-	-	-	-	-
Khairpur	-	-	-	-	-	-	-	-	-	-	-	-	-
Larkana	-	-	-	-	-	-	-	-	-	-	256	-	-
Kashmore	-	100	-	-	-	-	-	-	-	1	-	-	-
Kamber	-	-	-	-	-	-	-	-	-	-	-	-	-
Shikarpur	-	-	-	-	-	-	-	-	-	-	-	-	-
Jacobabad	-	-	-	-	-	-	-	-	-	-	-	-	-
East	-	-	-	-	1	-	-	-	-	-	-	-	-
West	-	-	-	-	2	-	-	-	-	-	4	-	-
Central	-	-	-	-	1	34	-	-	-	-	-	16	9
Malir	-	-	-	-	1	-	-	-	-	-	-	-	-
South	-	-	-	-	-	-	-	-	-	-	-	1	-
Korangi	-	-	-	-	-	-	-	-	-	-	-	2	-
Keamari	-	-	-	-	1	-	-	-	-	-	-	-	-

ANNEX-D

DISTRICT WEST

LIST OF LOW LYING RAIN/FLOOD EFFECTED AREA.

S.NO	LOCALITY LIKELY MOST EFFECTED	ADDRESS	UC NO	HOUSES APPROXIMATELY	POPULATION
01	Farooq Colony Orangi Town	Sec 11 ½	18	400 Houses	200 Nos
02	Mohammad Nagar Orangi Town	Sec 11 ½	18	450 Houses	2500 Nos
03	Thorani Goth Disco More	--	17	500 Houses	3000 Nos
04	Sec 12/L & 12/C Orangi Town	Noorani Masjid to post office	27	300 Houses	1200 Nos
05	Sec 7B Orangi Town		12	300 Houses	4400 Nos
06	Sector Ali Garh Colony Bukhari Colony Gulfam colony	Main Bazar Near MCb	13	800 Houses	2500 Nos
07	Tahira Masjid Area	Agarwar Colony	23	300 Houses	2500 Nos
08	Millat Colony Orangi Town	--	19	200 Houses	4000 Nos
09	Khuwaja Gharib Nawaz Colony	--	19	350 Houses	2000 Nos
10	Yousuf Goth Manghopir	Surjani	38	2000 Houses	40000 Nos
11	Karim Chowrangi	Surjani	38	650 Houses	5200 Nos
12	Khuda Ki basti	Surjani	38	850 Houses	6800 Nos
13	Surjani Power House	Surjani	38	300 Houses	2400 Nos
14	Macca Hotel Baba More	Surjani	38	400 Houses	3200 Nos
15	4-K Chowrangi	Surjani	39	325 Houses	2600 Nos
16	Sector 4-B	Surjani	39	--	--
17	Sector 4-A8, 4B	Surjani	39	--	--

DISTRICT
EAST

VULNERABLE POINTS

FEROZEABAD

- Main Nallah Shahrah-e-Quaideen
- Shahabuddin Market Lines Area
- Khudadad Colony
- Jut Line
- Behind Jacob Line & Central Jacob Line
- Mehmoodabad No. 6
- Near UC-1 Office Akhter Colony
- Kashmir Colony Nalla/Low area
- K.A.E.C.H.S
- Marton Quarter

JAMSHED QUARTERS

- Mano Goth
- Tahro Lane
- Baran Goth
- Soldier Bazar
- Area infront of New Town Police Station
- Nishter Road
- Gurumandit Near Sabil Masjid
- Jahangir Road
- Essa Nagri

VULNERABLE POINTS

GULSHAN-E-IQBAL

- Hassan Square Karachi
- NIPA Chowrangi Karachi
- National Stadium Karachi
- Area opposite to Agha Khan & Liaquat National Hospital Karachi
- Baloch Goth
- Azeem Khan Gabol Goth

GULZAR-E-HIJRI

- Saadi Town
- Amroha Society
- Sunlay Banglows
- Rhim Jhim Towers
- KESC Society
- Safoora Chowk
- Hansa Cooperative Society
- Soomra Cooperative Society
- Bilawal Shah Noorani Goth
- Few spots of Sachal Goth

DISTRICT CENTRAL

VULNERABLE POINTS

The Residents of Katchi Abadies residing on the embankments of Rain Nala i.e. Gujjar Nala, Orangi Nala & Lyari River are the most Vulnerable one.

Choking Points – District Central Karachi

Sub-Division Gulberg

- Café Piyla Block-12
- Water Pump Roundabout at Tarbooz Sharbat Block-13
- Front Shamim Pump Between Block 8 & 9
- Samanabad market
- Aisha Manzil Roundabaout
- Moosa colony front at Sambroz Hospital

Sub-Division New Karachi

- Fatima Jinnah Colony Link to Godhra UC-03 Nadi Kinara
- UP More main stop Nala Sector 11-I
- Khamiso Goth / Ali Ibrahim goth UC-9
- More UC-8
- Allah Wali near Nadi in habitant UC-9
- Nallah Stop UC-4
- Power House Chowrangi UC-12

Sub-Division Nazimabad

- Kashmir Mohalla
- Paposh Market & Chandni Chowk
- Haji Mureed Goth
- Mujahid colony

Sub-Division Liaquatabad

- Gujjar Nallah
- Chona Depot

Sub-Division North Nazimabad

- KDA Chowrangi Nallah
- Nadim Aracade Nagan Chowrangi
- Café Piyala

DISTRICT KORANGI

Choking Points District Korangi

No. of Choking/Trouble Points	Location of Major Choking Points	
15	Korangi No: 03, Nallah of 11000 Road connecting to Nallah of 12000 Road.	Korangi No. 1½ Nallah of 7000 Road Connection to Nallah of 12000 Road
	Chakra Goth Nallah connection to Nallah of 12000 Road.	Nallah at 10000 Road connecting to Nallah at 5000 Road.
	Nallah at 10000 Road connecting to Nallah at Korangi GPO 9000 Road.	Nallah of Gulshan-e-Sikandar connecting to Nallah of 12000 Road.
	Nallah of 13000 Road Connecting to Nallah of 10000 Road at Singer Pulia.	Nallah of 13000 Road Connecting to Nallah of Main Singer Roundabout.
	Nallah of T-Area Connecting to Nallah of 7000 Road.	Nallah of 362 Road Connecting to Nallah of 352 Road at Zaman Town.

Choking Points District Korangi

No. of Choking/Trouble Points	Location of Major Choking Points	
15	Different Choking Points at Nallah of 14000 Road.	Main Nallah of Zero Point (CBM Nallah) Korangi.
	Different Choking Points on Nallah From Kalaboard to RCD Ground.	Different Chocking Points on Main Nallah of Shahfaisal No.02.
	Chocking Point of 8000 Road Nallah from Chamra Chorangi to Vita Chorangi main Korangi Industrial Area Road.	

DISTRICT MALIR

Main Choking Points of District Municipal Corporation Malir

Sr. No	Choking Point	Proposal	Executing Agency
1	**Shall Petrol Pump to Airport Turning**	Construction of Strom Water Drain Nallah from Shall Petrol Pump to Airport Turning	KMC / Local Government Department
2	**Falak Naz to Airport Nallah**	Construction of strom Water Drain Nallah Form Falak Naz to Airport Nallah	KMC / Local Government Department
3	**Dawood Chowrangi Nallah**	Construction of strom Water Drain Nallah Form Near DMC Work Shop to DMC School	KMC / Local Government Department
4	**Bacha Jail**	De Watering Pump Required from PDMA	DMC / PDME

DISTRICT SOUTH

LIST OF MAIN NALLAS BELONGING TO KMC REGARDING THEIR MAINTENANCE/DESILTING/CLEANING

S.NO.	NAME OF NALLAH
13.	Mehmood Shah Road Nallah
14.	Piture Road Nallah
15.	Kalri Road Nallah
16.	Urdu Bazar Nallah
17.	Haroonabad Colony Nallah
18.	Sindh Assembly/MPA Hostel Nallah
19.	Sindh Secretariat Nallah
20.	Glass Tower Nallah
21.	Nehr-e-Khayyam Nallah
22.	Hijrat Colony Nallah
23.	Railway Colony Nallah
24.	Jubilee Road Nallah

PREVIOUS POINTS EXPERIENCED FOR DISPOSAL OF RAIN WATER BY THE CLEANING/OPENING OF CHANNELS AND MAIN HOLES REPLY NO.Sr. No.(i)

S.NO.	LOCATION OF STORM WATER DRAIN (SWD)	ACTION
1.	Near Metropole Hotel	Disposal of rain water by opening & cleaning of channel & main holes.
2.	Near Japan Consulate	do
3.	Hashim Ghouri Road Junction of Shahrah-e-Liaquat	do
4.	Near PC Hotel at Club Road	do
5.	Near Karachi Club to Beaumont Road	do
6.	Siddique Wahab Road Near Eye Hospital	do
7.	Near Jillani Centre & Edhi Centre at M.A. Jinnah Road	do
8.	Near Urdu Bazar	do
9.	At Ghulam Hussain Qasim Road	do
10.	At Dr. Ziauddin Ahmed Road	do

PREVIOUS POINTS EXPERIENCED FOR DISPOSAL OF RAIN WATER BY DEWATERING THROUGH PORTABLE PUMPS .

S.NO.	LOCATION OF STORM WATER DRAIN (SWD)	ACTION
1.	Clifton Bridge both sides at Abdullah Haroon Road	Cleaning of rain water by dewatering pumps
2.	Near Arts Council/Hindu Gymkhana at M.R. Kiyani Road	do
3.	Hatim Ali Alvi Road near Ameer Khusro Park	do
4.	Bilawal Chowrangi	do
5.	Near Palm Marriage Lawn at Shahrah-e-Attar	do

6.	Opposite Hyper Star Clifton	do
7.	Opposite Bukhtawar Tower	do
8.	Metropole Round About	do
9.	Kutiyana Hospital Kharadar	do
10.	Near KMC Head Office Light House	do
11.	Behind Spencer Eye Hospital	do

CLEANING/DE-SILTING OF CHOKING PORTION OF STORM WATER DRAINS (SWD) FALLING WITHIN THE JURISDICTION OF DMC (SOUTH)KARACHI

S.NO.	NAME/LOCATION OF STORM WATER DRAIN (SWD)
1)	From Edhi Center via Stock Exchange to NTR Colony and Habib Bank Plaza.
2)	From Nabi Bux Police Station via Jubilee Round About at Mashamli Road
3)	From Street No.26 to Hyper Star Clifton
4)	From Dua Chowrangi to Shireen Jinnah Colony
5)	Horizon Tower to NAB Court Clifton
6)	From Houshing Road upto Irani Bridge and Bagh-e-Jinnah Aiwan-e-Saddar to PC Hotel
7)	From Karachi Club to Civil Line Police Quarter at Beaumont Road
8)	From Street No.01 to 17 at Gulshan-e-Faisal Bath-i-Land
9)	Abdullah Shah Ghazi Mazar to Dolmen Center at Shahrah-e-Attar
10)	From Ghosia Masjid to Mauripur Road Machar Colony Lyari
11)	From Salman Azad Road to Machar Colony via Mauripur Road Lyari
12)	From Jumma Baloch to Kalri Nallah via Mauripur Road Lyari
13)	Along Mirza Adam Khan Road to PI Stop 01 point Lyari
14)	From Khayaban-e-Iqbal opp: Glass Tower including Block No.07 Police Officers Colony Clifton

NAME AND CELL NOS. OF THE CONCERNED OFFICERS

S.NO.	NAME OF OFFICER	DESIGNATION	CELL NO.
1.	**Mr.Akther Shaikh**	**Municipal Commissioner**	0323-8888887
2.	**Mr.Abdur Razzaq Junejo**	**Superintending Engineer**	0342-3000063
3.	**Mr.Azhar Hussain Shah**	**Executive Engineer (B&R) Saddar**	0345-35945187
4.	**Mr.Amanullah Watio**	**Executive Engineer (B&R) Lyari**	0333-2217164
5.	**Mr.Munawar Pervaiz Bhatti**	**Chief Sanitary Inspector Lyari**	0336-2455768
6.	**Mr. Zilur Rehman Siddiqui**	**Asstt:Executive Engineer Saddar Zone**	0333-2271672
7.	**Mr.Nasir Ahmed Khan**	**Director Sanitation**	0323-3287917
8.	**Mr.Shakil Ahmed Rao**	**AEE (M&E) Saddar**	0321-2448581
9.	**Mr.Wazir Ali**	**Director Local Taxes**	0300-2253671
10.	**Mr. Arif Khan**	**Director Complaints**	0313-9437021

DISTRICT
KEAMARI

IDENTIFICATION OF VULNERABLE POINTS / LOW LYING AREAS.

SUB-DIVISION	VULNERABLE / CHOKING POINTS
Keamari	➢ Sultanabad ➢ MT. Khan Road ➢ Machar Colony ➢ Sikandrabad ➢ Shershah ➢ Gulbai Chowrangi ➢ Baba Bhitshah

SUB-DIVISION	VULNERABLE POINTS
Maripur	➢ Moach Goth Football Ground ➢ Main Road Katchi Para ➢ Kachelo Para Near Graveyard ➢ Wachani Mohalla ➢ Eid Gah Ground Musharf Colony

IDENTIFICATION OF VULNERABLE POINTS / LOW LYING AREAS.

SUB-DIVISION	VULNARABLE POINTS
Baldia	➢ 15 Police Chowki Hub River Road ➢ Noorani Ground, Iqbal Road ➢ Gulshan-e-Ghahzi Graveyard ➢ Police Training Centre ➢ Yousuf Goth ➢ Sadullah Goth ➢ Moach goth

SUB-DIVISION	VULNARABLE POINTS
S.I.T.E	➢ Metroville ➢ Qasba colony ➢ Pak colony ➢ Mianwali colony ➢ Johar Colony ➢ Old Golimar ➢ Jahanabad

DETAILS OF DANGER ZONES / NALLAHS WITH CHOKING POINTS.

SUB-DIVISION	NAME OF NALLAHS WITH CHOKING POINTS	
KEAMARI **(HARBOUR)**	**Main M.A. Jinnah Road.** From Gate No. 01 to Gass Bander **(Jurisdiction of KMC)**	❖ Nagina Center. ❖ KPT Flyover. ❖ Ghaib Shah Mazar. ❖ Police Line. ❖ Seaman Hostel. ❖ Sindh Baluchistan Hotel. ❖ Gass Bander.
	Tara Chand Road Nallah, Babul Islam Society Block No. 01 to KPT Ground	❖ 23 points of street inter section
	Docks Colony Nallah, From Seaman Hostel to Sea Via KDLB office	❖ Jungle Shah Collage ❖ Seaman Hostel ❖ Jungle Shah Mazar ❖ Karim Centre ❖ KDLB Office. ❖ Najja Masjid & Sea.
	KMC Sweeper Compound Nallah and Hussain Bux Road Nallah, From Tara Chand Road to Docks Colony	❖ KMC Compound. ❖ Toheed Masjid. ❖ Faroog-e-Azam Masjid. ❖ Nagina Center. ❖ Habib Bank
	Sadia Masjid Nallah, From Sadia Masjid To Ashfaque Colony	❖ 14 points of street inter section
	Charnal Road Nallah (Both Side), From Kamalla Chowk to Quba Masjid	❖ Pathan Masjid. ❖ Shareef Clinic. ❖ Roop Plaza. ❖ Quba Masjid ❖ Tajbar ShoP.
	Umer Khan Road Nallah, From Wazir Badshah House to UC-1, 2, and Nallah	❖ 15 points of street inter section
	Qasim Shah Road Nallah, From Yaqoob Munda Chowk Via Bhapira Gali to Sea.	❖ 12 points of street inter section

DETAILS OF DANGER ZONES / NALLAHS WITH CHOKING POINTS.

SUB-DIVISION	NAME OF NALLAHS WITH CHOKING POINTS		
KEAMARI (HARBOUR)	**Qasim Shah Nallah,** From Dr. Karim Gali Via Mubarak Masjid to Sea.	❖ Qasim Shah House. ❖ Chahchi Hotel ❖ Mohammad Khan Wara ❖ Minar Masjid. ❖ Mubarak Masjid	
	Massan Road Nallah, From KPT Ground to Massan Chowk	❖ KPT Ground. ❖ Jadoon House. ❖ Guzar Masjid. ❖ A-Shifa Hospital. ❖ A-Felah Masjid. ❖ Massan Chowk.	
	Subhan Allah Road Nallah, From samajee Tanzeem Road Via Subhan Allah Masjid and Usman Ghani Masjid to Sea.	❖ Subhan Alah Masjid. ❖ Usman Ghani Masjid. ❖ Toheed Masjid. ❖ Ibn-e-Umer Masjid. ❖ 10 Nos. Street Inter Seciton	
	Bhutta Village Nallah,	❖ Chamal Road Nallah ❖ Qasim Shah Nallah ❖ Haji Rafique Gali Nallah ❖ Bilal Masjid Nallah ❖ Subhan AMah Masjid Nallah ❖ Saeedia Masjid Nallah	❖ Umer Khan Road Nallah ❖ Kohati Mohallah Nallah ❖ Jadoon House Nalah ❖ KPT Ground Madni Masjid ❖ Masan Road Nallah
	Muhammadi Colony Nallah, (Pitcher Nallah), From I.C.I. Bridge to Machar Colony Nallah. **(Jurisdiction of KMC)**	❖ Haj Camp Gate1 ❖ Heji Camp Gate-2 ❖ NLC head Quarter Gate. ❖ Mai Kalachi Road ❖ Samaji Culvert.	❖ Baba Jalal Culvert ❖ Jaffer Culvert. ❖ Market Culvert. ❖ Shamsoo Culvert. ❖ Sattar.Culvert
	Kalary Nallah, From Maripur Road to Machar Colony Nallah. **(Jurisdiction of KMC)**	❖ Pitcher Nallah. ❖ Purana Para. ❖ RO. Plant infront Main Road ❖ Fishery.	

DETAILS OF DANGER ZONES / NALLAHS WITH CHOKING POINTS.

SUB-DIVISION	NAME OF NALLAHS WITH CHOKING POINTS	
MARIPUR	**Budhni Nallah,** From Baldia Sajan Goth to Sea. **(Jurisdiction of KMC)**	❖ Baldia Culvert. ❖ Ediamin Culvert. ❖ Northern Bypass Culvert. ❖ 22 Khandan Mohallah. ❖ 500 Quarters. ❖ KANUP
	Sher Muhammad Village Nallah, From PAF Ground to Sea.	❖ Mauripur Pumping Station ❖ Pump House.
	Maripur Village Nallah, From Custom Colony to Telephone Exchange	❖ Dilfulabad Culvert. ❖ Baloch Mohallah Culvert. ❖ Pump House Culvert. ❖ Hawksbay Road Culvert. ❖ Telephone.Exchange.
	Bilal Masjid Nallah, From Sill Colony to Bilal Masjid and Sea.	❖ Main Road Bilal Masjid. ❖ Bilal Masjid Pump Station.
	Jaskani Mohalla Nallah, From Mari Road to Iqra Masjid.	❖ Complete covered

DETAILS OF DANGER ZONES / NALLAHS WITH CHOKING POINTS.

SUB-DIVISION	NAME OF NALLAHS WITH CHOKING POINTS	
SITE	**Nallah along Sher Shah,** From Moriro Graveyard Masjid-e-Quba to Lyari Nadi. (Jurisdiction of KMC)	❖ Graveyard Culvert. ❖ Urdu Bazar. ❖ Lyari Expressway Culvert.
	Nallah in Sher Shah, From Habib Bank to Lyari Nadi. (Jurisdiction of KMC)	❖ Habib Bank, Sher Shah ❖ Shaheen Hotel. ❖ Urdu Bazar ❖ Muhammadi Road ❖ Jinnah Road ❖ Akber Road. ❖ Lyari Expressway Culvert.
	Jinnah Road Block "C" Nallah From street # 54 to 69	❖ Street # 50 ❖ Street # 54 ❖ Street # 55 ❖ Street # 58 ❖ Street # 60 ❖ Street # 69
	Muhammad Road Block "B" Nallah From street # 21 to 41	❖ Street # 21 ❖ Street # 23 ❖ Street # 41

DETAILS OF DANGER ZONES / NALLAHS WITH CHOKING POINTS.

SUB-DIVISION	NAME OF NALLAHS WITH CHOKING POINTS	
BALDIA	**Storm water Drain start,** From Afridi Colony to Edhi Centre, Hub River Road passing through UC-32 and UC-31	❖ Abu Dai wali pullia ❖ Kashit wali pullia ❖ Iqbal Road wali pullia ❖ Next to Ighal Road pullia ❖ Graveyard ❖ Garhad road wali pullia ❖ Zahoor wali pullia ❖ Awami street ❖ Muhammd Masjid Mianwali para ❖ Sher bahaur wali pullia ❖ Bangali para wali pullia ❖ Tember Market wali pullia
	Strom water drain starts, from Noorani Ground to NOOR Island Road,passing through UC-32	❖ Noorani Ground wali pullia ❖ Noor Island wali pullia
	Strom Water Drain starts, From G-3 bus stop to 2 Nos Baldia Hub River Road,passing through UC-35	❖ Bukhari Masjid wali pullia ❖ Jam Nagar wali pullia ❖ Chakki wali pullia ❖ Jabbaer wali pullia ❖ Dada Mada wali pullia ❖ Kausar Chawk Mazzer ❖ Gujjar Mohallah ❖ No.2 School wali gali
	Strom WaterDrain Starts, Rasheedabad Niazi Mohallah up to 20 Nos Bus stop UC-35	❖ Terbella Mohallah ❖ Shoukat Mohallah ❖ 2 Point Niazi Mohallah ❖ PSO Rasheedabad 20.No Bus Stop

DETAILS OF DANGER ZONES / NALLAHS WITH CHOKING POINTS.

SUB-DIVISION	NAME OF NALLAHS WITH CHOKING POINTS	
BALDIA	**Strom Water Drain Starts,** Form Gulshan-e-Ghazi Madina Hospital UC-1 crossing Police Trsining Center up to PSO Moach More UC-33 7 UC-30	❖ Gulshan-e-Ghazi Chowk Masjid ❖ Jeddah Hazara Colony Jumma Bazzar culvert ❖ Gousia Masjid culvert ❖ Ishaq Tahlla culvert ❖ Khursheed Memorial Park back side culvert ❖ Rubi Cinema Culvert ❖ PSO Pump Moach More
	Storm Water Drain starts, Form Khyber Chowk &aja Tanveer Colony/Imam Bargha Sabeel up to Hassan Goth crossing through UC-36 and UC-37	❖ Raja Tanveer Colony Culvert ❖ Zero Point Ittehad Town Culvert ❖ Bargha - e- Sabeel Culvert ❖ Sector12 main road Culvert ❖ Hassan Goth Culvert
	Strom Water Drain starts, From Sherazi Muhallah /Saadullah Goth/Dawood Goth uo to Moach Goth Passing through UC-37	❖ Saadullah Culvert ❖ Dawood Goth Culvert ❖ Sector No.11 Culvert ❖ Sajjan Goth Culvert
	Strom Water Drain , atMain Hub River Road From 2 Nos,Uc-35 to Moach Goth UC-37	❖ SP Office to Moach More PSO pump ❖ Edhi Center ❖ 5-B Road Culvert ❖ 4- No. Mahajir Camp Culvert ❖ 3 No . Mahajir Camp Culvert ❖ 2 No. Mahajir Camp Culvert
	Srom Water Drain starts, From pakora Chowk Sector 11 Grave Yard UC-37 & UC-37	❖ Pakora Chowk Culvert ❖ Qazi Hospitasl Culvert ❖ Kabari Chowk culvert ❖ Sect. 11 Graveyard Culvert
	Srom Water Drain starts, From 19-D up to Rubi Cinema UC-36 to UC-30	❖ 19-D Bus Stop ❖ Quetta Hotel Jungle School Road ❖ Stadium Chowk ❖ Police Complex Road

DISTRICT HYDERABAD LOW LYING AREAS

Latifabad			
Sr. #	**Name of area with location**	**Sr. #**	**Name of area with location**
	Latifabad No.1 GOR Colony Bangali Colony, Baban Shah Colony		Latifabad No.02 Around sewerage Disposal, Mumtaz Colony
	Latifabad Unit No.3 Near House No.100-A Hussainabad		Latifabad Unit No.04 Goth Ali Abad, Neem wali Gali, Around Garment factory
01	Latifabad Unit No.5 Munawarabad Block D Tariq Colony, SohrabPlari Goth, FazalLeghari Goth	10	Latifabad Unit No.7 Around Hani School, Around Farooqia Masjid
02	Latifabad Unit No.8 Around APWA school, F-Block, B-2, Fire Birgade	11	Latifabad Unit No.9 B-Block Tando Mir Ghulam Hussain
03	Latifabad Unit No.10 Dino Patal Goth, Koli Goth, Bachal Leghari, Pacci Colony, Christian colony	12	Latifabad Unit No.11 Around Bilal Masjid E-Block Near Hussain Imam Bargah
04	Latifabad Unit No.12 Feroz colony.		

City			
Sr. #	**Name of area with location**	**Sr. #**	**Name of area with location**
01	Liaqat Colony Graound	09	Katchi Para
02	Tando Mir Mehmood Grave Yard	10	Malka Nagar
03	LaloLashari Goth	11	Sardar Colony
04	KhursheedTawn	12	Ahsanabad
05	Solangi Goth Hala Naka	13	FaqirkaPir Fire Brigade
06	Mir NabiBux Town (NooraniBasti)	14	Railway Colony
07	Hyder Shah Electric Pump	15	Ali Abad
08	Mirza Para Sikandarabad	16	HaiderChowkQaziQayom Road

Qasimabad			
Sr. #	**Name of area with location**	**Sr. #**	**Name of area with location**
01	Waqar Town Phase 1 & II	11	Citizen Colony
02	Sheedi Goth	12	Bhitai Town
03	Ali Nagar	13	Village Kran Khan Shoro
04	Doomrah Goth	14	New Wahdat Colony
05	Wahdat Colony KatchiAbadi	15	Gulshan-e-Mehran Phase –I & II
06	Al-Shahbaz Colony	16	DehMirzaPur **(Rural Area)**
07	Mir Fateh Colon	17	Deh Shah Bukhari **(Rural Area)**
08	Abdullah Town	18	Marvi Town
09	Gulistan-e-Sajjad	19	Lab-e-Mehran
10	Chadia Goth	20	Bhitai Nagar

Hyderabad Rural			
01	Haji PunhoonBoro	28	AllahyarPanhwar

02	Hoosri City	29	Allah RakhioNizamani
03	Sukhpur	30	Mir –ji-Khari
04	PhullanBaladi	31	Seri City
05	Panhwari	32	Ghulam Muhammad Jamali
06	Abdullah Shoro	33	Umer Halepoto
07	BachayoJhanjihajo	34	Bhaledino Shoro
08	BuxoRindh	35	Hassan Panhwar
09	TayabMahar	36	Mir koat
10	SalehBurdi	37	Umer Ali Rindh
11	Panhwarabad	38	Ramzan Brohi
12	Hakeem Khoso	39	Halepota
13	QasimBurdi	40	SalehBurdi
14	Fojo Lashari	41	MehrabSolangi
15	Allah Dino Lashari	42	LoangSolangi
16	BuxoLaghari	43	KhamisoSolangi
17	Munghio	44	Allan Burdi
18	Sono Laghari	45	NandoBurdi
19	GhulamHussainSirawal	46	Village Tando Hyder
20	SonoAlmani	47	Village Tando Qaisar
21	Ahmed Khan Almani	48	Village Bhawal Zour
22	GhafoorAlmani	49	Village Seri
23	M. Dall	50	Village Moosa Khatian
24	PalioSolangi	51	Village Tando Fazal
25	Hingora	52	Village Tando Alam Mari
26	Tangeri	53	Village Sawan Khan Gopang
27	Norai Sharif	54	

DISTRICT LARKANO

CURRENT STATE OF FLOOD PROTECTION BUNDS IN PROVINCE, PROGRESS ON BUND RAISING / STONE PITCHING

All the River protective bunds in the jurisdiction of Northern Dadu Division Larkano are raised according to DHFL 2010, at present the condition of bunds are satisfactory and flowing reaches of bund are protected by providing stone pitching.

I.	SL Bund Mile 0/2 to 5/6	5-4 Mile
II.	Ghumra Loop Bund Mile 0/0 to 4/6	4-6 Mile
III.	S.L Bund Mile 29/6 to 30/30	0-5 Mile
IV.	Nasrat Loop Bund Mile 0/0 to3/4 and 4/0 to 4/6	4-2 Mile
V.	Moria Loop Bund Mile 0/0 to 1/0	1-0 Mile
VI.	Agani Akil Loop Bund Mile 0/0 to 2/4	2-4 Mile
VII.	Akil Loop Bund Mile 0/0 to 0/7	0-7 Mile
VIII.	Akil Link Bund Mile 0/0 to 1/1+150	1-1+150 Mile
IX.	Abad Manguli Extension bund Mile 0/5 to 1/5	1-0 Mile
X.	L.S Bund Mile 17/1 to 17/1+150 ft	0-150 ft
XI.	L.S Bund Mile 10/0 to 11/0	1-0 Mile
XII.	L.S Bund Mile 20/5 to 22/6	2-1
XIII	L.S Bund Mile 32/3 to 36/2	3-7 Mile
	Total	25-3+300 ft

VULNERABILE POINTS ALONG RIVER BUND

Northern Dadu Division, Larkano

1. Moria Loop Mile 0/0 to 1/0, opposite Naudero City (Most Vulnerable)
2. Akil Loop Bund 0/0 to 0/7, opposite Larkano City (Vulnerable)
3. L.S Bund Mile 16/7, Near Mohen Jo Daro City (Vulnerable)
4. Spurs at Ruk Loop Bund Mile 0/5 ,1/1,1/6 and 2/3, District Shikarpur (Vulnerable)

Sr. No	Taluka	Location	De-watering machines
1	Nawabshah	– Mehran Colony, Sakrand Road Nawabshah. – Azeem Colony, Sakrand Road Nawabshah. – Taj Colony, Bucheri Road, Nawabshah. – Afzal Shah Colony, Sanghar Road, Nawabshah. – Peela Camp. Sanghar Road, Nawabshah. – Mujahid Colony, Hussaini Road, Nawabshah. – Mahajir Colony, Hussaini Road, Nawabshah. – Nadar Shah Colony, Jam Sahib Road, Nawabshah. – Bhangwar Colony, VIP Road, Nawabshah. – Behind Barrage Mukhtiarkar Office, Nawabshah.	59
2	Sakrand	– Mehrabpur Road Sakrand Town (KHAD) in Machi Mohallah. – Zanowr Colony Khadhar Road, Sakrand. – Bukhari Mohallah, Sakrand	10
3	Kazi Ahmed	– Village Sun and its vicinity, Deh Sun. – Village Sawari, Deh Sawari. – Village Jari, DehJari. – Village Makhand, Deh Makhand.	14
4	Daur	**1.Daur Town** – A (Low lining pit) is lying on the northern site of Daur Town near Baloch Mohallah and Bilal Masjid. – A (Low lining pit) is lying on eastern side of Khanzada Mohallah near Railway Station Daur. – A (Low lining pit) is lying near Southern Railway Phatak near Railway Station Daur. – A (Low lining pit) is lying near Markazi Imam Bargah near Ali Abad Mohallah Daur. – A (Low lining pit) is lying on Southern side of Raza Abad near Nazir Colony on Eastern side of Railway Station Daur. **2.Bandhi Town** – A (Low lining pit) is lying on the northern site of Rehman Abad Colony Bandhi – A (Low lining pit) is lying on the Northern Side of Bandhi Town and Eastern side of Northern Railway Phatak Bandhi, – A (Low lining pit) is lying on Southern Side of Bandhi Town near Jamali and Sochi Mohallah Bandhi. **3.Jam Sahib Town** – A (Low lining pit) is lying near Shar Mohallah of Western Side of Jamsahib Town near House of Noor Muhammad. – A (Low lining pit) is lying on Southern Side of Town Jam Sahib near Jam-Wah at Jam Sahib. – A (Low lining pit) is laying on Northern Side of the Graveyard Sakhi Jam Datar, near the House of Muhammad Yousif DatariDahri, Solangi and Khaskheli House at Jam Sahib.	05 05

DISTRICT SUKKUR

1. **THE RAIN/MONSOON TO WHICH DISTRICT IS PRONE ALONG WITH THE HISTORY OF SIMILAR DISASTERS OCCURRED IN THE DISTRICT EFFORTS AND LESSONS LEARNT.**

KATCHA TRACT LIKELY TO BE AFFECTED BY FLOOD

NAME OF TALUKAS

1. Sukkur & New Sukkur,Old Sukkur, Dindi Dharejo, Saeedabad.
2. Rohri, Ali Wahan, Khadri Katcho Mando dero, Pacco Mando Dero, Dalho & Jhanghro.
3. Pano Akil, Sadhuja, Budh KHeraj, Shahpur, Katcho No.1 Ural, Katcho No.2, Khan Belo Panhwari, Kadir Dino, Bindi Katcho Kadir Dino, Sunder Belo, Bahman Hussain Belo, Pacco Bindi, Shah Belo and Bindi Tharechani.

2. **VULNERABLE VILLAGES/TOWN.**

1. **TALUKA VILLAGES ROHRI.**

Ali Wahan, Khadri, Katcho Mando Dero, Pacco Mando Dero, Dalho and Jhangro.

2. **PANO AKIL.**

Sadhuja, Budh Kheraj, Shahpur, Katcho Shahpur, Katcho No.1, Ural, Katcho No.2, Khan Belo, Panhwari, Kadir Dino, Bindi Katcho Kadir Dino, Sunder Belo, Bahman, Hussain Bel, Pacco Bindi, Shah Belo and Bindi Tharechani.

3. **SUKKUR & NEW SUKKUR.**

Old Sukkur, Bindi dharejo, Saeedabad, Bagarji, Mai Ranjhan.

4. **VULNERABLE POINTS OF TALUKA SALEHPAT.**

1. Metho Mahar, (2) Sobo Mahar (3) Village Venjhko (4) Village Gagro (5) village Saba Bhatti, (6) Village Warro Bhambro (7) Village Januji (8) Village Tooriyoon (9) Village Duhalwaro (10) Village Old Januji (11) Village Shahbaz Dino (12) Village Soohanro.

2. IDENTIFICATION OF VULNERABLE POINTS I.E LOW LYING AREAS, ENCROACHMENTS, WEAK EMBANKMENTS ETC.

VULNERABLE POINTS/ BUNS AND EMBANKMENT.

S.No	POINTS	AREA
1	Length of bund on left bank river Indus start from 0/0 mile Ali Wahan to Gemro bund.	44 Miles
2	Sukkur Begari bund on right bank of River Indus star from 0/0 Miles Jiand Pir to Garang.	7 Miles
3	Inside the protected walls within the city limits.	2 Miles

S.No	POINTS	REASONS
1	RD-O5 to 07 L/S Bunder wall	Sluice point
2	S.B Bund mile 0/0 to 4/6 (R/S Old Sukkur)	Single Line & Open to wave wash.
3	Baiji Bund L/S Mile 8/3+330 to 8/4+330	Weak Embankments.
4	R.N Bund (Mile 0/0 TP 0/3)	Threat of below out

MIRPURKHAS

IDENTIFICATION OF VULNERABLE POINTS, I.E LOW LYING AREAS,WEEK EMBANKMENTS, ETC;

TALUKA	VULNARABLE POINTS
Mirpurkhas	Nill
Shujaabad	Doulatpur Minor near Mirwah road and Village Jagirdar Muhmmad Moosa Chana Khumbri Minor Near BHU Khumbri and Village Syed Altaf Hussain Shah. MMD Near Rattanabad.
Hussain Bux Mari	Jamrao Canal Jamrao West Main Drain Sim Nalas
Sindhri	Jamrao Canal Mithrao Main Drain Sim Nalas Spinal Drain.
Digri	Jamrao Canal Naseer Canal Sarfaraz Wah Digri

TALUKA	VULNARABLE POINTS
KGM	Jamrao Canal Mithrao Canal Main Sim Nala Puran Dhoro
Jhudo	Main Sim nala Deh-356,343,342,355,357,358A ,358,353,352,340,341,341A Puran Dhoro Deh 311,314,202,264,313,315,317,370A,359,318,318A,319A,319B,,Dehti Deh 319A,319B Dehti, Athela,360&Udhejani
Executive Engineer Drainage Divisional Mirpurkhas	**LBOD SPINAL DRAIN** RD 295.0, RD 360.0, RD 391.0, RD 451.0,
	DHORO PURAN RD 128.0, RD 202.0, RD 218.0, RD 234.0,

THE LOW LYING AREAS, WEEK EMBANKMENTS, DISTRICT MIRPURKHAS WHICH ARE AS UNDER:-

TALUKA	VULNARABLE POINTS
Mirpurkhas	Pathan Para Deh Panhwarki & Khuth Pumping station near Sattri Cotton Factory Rahim Nagar Para Deh Panhwarki & Khuth Pumping station near Sattri Cotton Factory Gulshan Colony Para Deh Panhwarki & Khuth Pumping station near Sattri Cotton Factory Wahdat Colony Para Deh Panhwarki & Khuth Pumping station near sattri cotton factory Alam Town Para Deh Panhwarki & Khuth Pumping station near sattri cotton factory Village Mir Sher Muhammad Talpur Panhwarki Pumping station Mir jo Goth. Foji Qabaristan Manzoorabad Panhwarki Pumping station Panhwar Colony. Manzoorabad Panhwarki Pumping station Panhwar Colony. Rahimabad Panhwarki Pumping station Panhwar Colony. Samnabad Panhwarki Pumping station Panhwar Colony. Bukhari Town Panhwarki Pumping station Panhwar Colony. Mansoorabad Panhwarki Pumping station Panhwar Colony. Hirabad City Pumping station Azizabad & Khad Plot. Azizabad City Pumping station Azizabad & Khad Plot. Mehar Cinema City Pumping station Azizabad & Khad Plot. Khad Plot City Pumping station Khad Plot. Gharibabad City Pumpingstation Khad Plot.

TALUKA	VULNARABLE POINTS
Shujaabad	1. Near Village Boorji, Deh Boorji. 2. Mirwah Town, Deh Mirwah. 3. Village Khumbri, Deh Khumbhri. 4. Village Bhagat, Deh Seri. 5. Village Makhan Samoon, Deh Chand Morio. 6. Village Jam Laghari, Deh Manjri. 7. Village Ghulam Muhammad Rind, Deh Kak. 8. Village Nizamuddin Mohajir,deh 381. 9. Village Janak Laghari,Deh Chand Morio. 10. Village Lal Khan Laghari, Deh Belaro. 11. Jhulori Town, Deh250. 12. Village Syed Ali Nawaz Shah,Deh Panoon Noondani. 13. Village Muhammad Ali Halepoto Deh 246. 14. Village Jewan Khan Lund Deh 244. 15. Village Ch.Ghulam Muhammad, Village Ghulam Muhammad Laghari Deh Mirwah. 16. Village Kishori Lal Village Mevo Khan Laghari Deh Chehlaro. 17. Village Bacho Khan Chandani Deh 380. 18. Village Niaz Baloch Deh 383. 19. Village Tahrani Farm Deh 384 20. Village Taju Khaskheli, Deh 378 21. Village Wali Mohd Khatiyan Deh Chahoo 22. Village Hameer khaskheli Deh Toori 23. Village Aaghy Dino Dal Deh 237 24. Village Sono Khan Lashari Deh 248

TALUKA	VULNARABLE POINTS
Hussain Bux Mari	01. Sorrounding Near Deh 101, 106. 02. Sorrounding Near Deh 100. 03. Sorrounding Near Deh 113,114. 04. Sorrounding Near Deh 117. 05. Sorrounding Near Deh 115,116,118,119. 06. Sorrounding Near Deh 105. 07. Sorrounding Near Deh ,102. 08. Sorrounding Near Deh 103 09. Sorrounding Near Deh 96,97. 10. Sorrounding Near Deh 95. 11. Sorrounding Near Deh 120. 12. Sorrounding Near Deh 91. 13. Sorrounding Near Deh 92,93. 14. Sorrounding Near Deh 94. 15. Sorrounding Near Deh 99. 16. Sorrounding Near Deh 88,89,90. 17. Sorrounding Near Deh 79A,80,81,81A,82A. 18. Sorrounding Near Deh 77,71,122,123,125. 19. Sorrounding Near Deh 78,121. 20. Sorrounding Near Deh 110. 21. Sorrounding Near Deh 104. 22. Sorrounding Near Deh 109.

TALUKA	VULNARABLE POINTS
Sindhri	Deh Hingorono Deh Walwari Deh Tagusar Deh Jamilani Deh Laik Pir Deh Palango Deh Dher Mitho Fakir Deh Gambho Fakir Deh Atna Deh Saifal-I Deh Saifal-II Deh Saindad Choro Deh Saeedki Deh Halepotani Deh Allah Khai Deh Assasar Deh Allah Bux Mari Deh Fateh Mohammad Mashaikh Deh Kakeji

TALUKA	VULNARABLE POINTS
Sindhri	Deh Phullahdyoun Deh Hanjar Hadi Deh Rawatro Deh Sarhal Deh Sirhari Deh Doboto Deh Banusar Deh Kangal Deh Kher Tarai Deh Amin Okar Deh Kander Deh Liyari Deh Lund Deh Nido Junejo Deh Kehroro Deh Charhi Manglan Deh Charhi Bux Pahore Deh Malook Halepoto

TALUKA	VULNARABLE POINTS
Digri	Deh 146,156,147,157,158,159,141,142,144,144A,148,165,166,167,152,153,161, 161A,160,164,162,162A,163,168,169,168,143,149,150,151,154,155,174,1 78,192,193,195,262,263,265,199,186,194,198,200,201,204,206,190,191,19 6,197,198A,198,179,187,188,189,175,181,182,183,184,185,170,171,180,1 72,173,176,177,180.
Jhudo	Deh,359,360,Udhejani,Athela,352,353, 341,342 ,317, 315,316,264,358,318,354,355, 354-A, 370-A, 202, 319, 319-A, 319-B, Dehti, 311,314,343,357,358-A,356,341-A, and 318-A.
Kot Ghulam Muhammad	Deh 251,252,253,277,255,271,273,257,282,274,274A,292,293,270,270A,286,2 95,296,297,259,300,301,301A,303A,304,305,306,268A,267,269,260,261,2 66,308,308A,and 307.

Annex-D1

DISTRICT DADU

IDENTIFICATION OF VULNERABLE POINTS / LOW-LYING URBAN AREAS

Sr. No.	Taluka	Vulnerable Points of Nai Gaj Flood Water of Kachho
01	Johi	Drigh
02		Serai Lund
03		Tribal Lund
04		Sajjan Joon Payoon
05		Kululli Laghari
06		Rajo Gghado
07		Guhram Jo Goth
08		Nagar Dharyo
09		Baghnel
10		Haji Khan
11		Wahi
12		UC Sawero
Vulnerable Points / Low Lying Urban Areas		
13	Johi	Umar Colony Johi Town
14		Leghari Mohalla Johi Town
15		Menghwar Mohalla Johi Town
16		Ghaffari Masjid Mohalla Johi Town
17		Hussainabad Colony Johi Town

18		Babar Mohalla Johi Town
19		Jiskani Mohalla Johi Town
20		Mastoi Mohalla Johi Town
21		Jamali Mohalla Johi Town
22	Dadu	Muhammad Shah Colony Dadu Town
23		Chhano Shahabad Dadu Town
24		Zulfiqarabad Colony Dadu Town
25		Majeed Colony Dadu Town
26		Farhan Colony Dadu Town
27	K.N. Shah	Soomra Muhalla Ward-6 KN Shah town
28		Rehmatullah Colony KN Shah town
29		Mir Colony KN Shah town
30		Al-Madina Colony KN Shah town
31		Water Supply Mohalla KN Shah town
32		Jokhia Mohalla KN Shah town
33		Baghia Mohalla KN Shah town
34	Mehar	Sikandar Colony Mehar town
35		Wahdat Colony Mehar town
36		Khad Jo Goth Mehar town
37		Sulleman Colony Mehar town
38		Gul Colony Mehar town
39		Madina Colony Mehar town
40		Mansoor Colony Mehar town

DISTRICT JAMSHORO

IDENTIFICATION OF VULNERABLE POINTS, I.E. LOW LYING AREAS, ENCROACHMENTS, WEAK EMBANKMENTS, ETC.

Sr. No.	TALUKA	VULNERABLE POINTS	REASONS
01	Sehwan	Larkana-Sehwan Bund Mile 95/2	Leak occurred during flood 2010 (District Jamshoro)
02	Sehwan	Larkana-Sehwan Bund Mile 99/7	Leak occurred during flood 2010 (District Jamshoro)
03	Sehwan	Manchhar containing Bank R.D 7.0	Breach Point (District Jamshoro)
04	Sehwan	Manchhar containing Bank R.D 11.0	Breach Point (District Jamshoro)
05	Sehwan	Manchhar containing Bank R.D 62	Danster Tail Regulator (District Jamshoro)
06	Sehwan	Manchhar containing Bank R.D 93	Breach Point (District Jamshoro)
07	Sehwan	Manchhar containing Bank R.D 96	Breach Point (District Jamshoro)
08	Sehwan	Manchhar containing Bank R.D 97-98	Breach Point (District Jamshoro)
09	Sehwan	Manchhar containing Bank R.D 99/100	Breach Point (District Jamshoro)
10	Manjhand	Sann Veeh Dari Bund Mile 11/6	Breach Point (District Jamshoro)

Low Lying Areas of Sehwan Sharif Town:

a. Bunder Muhalla

b. Bhutto Muhalla

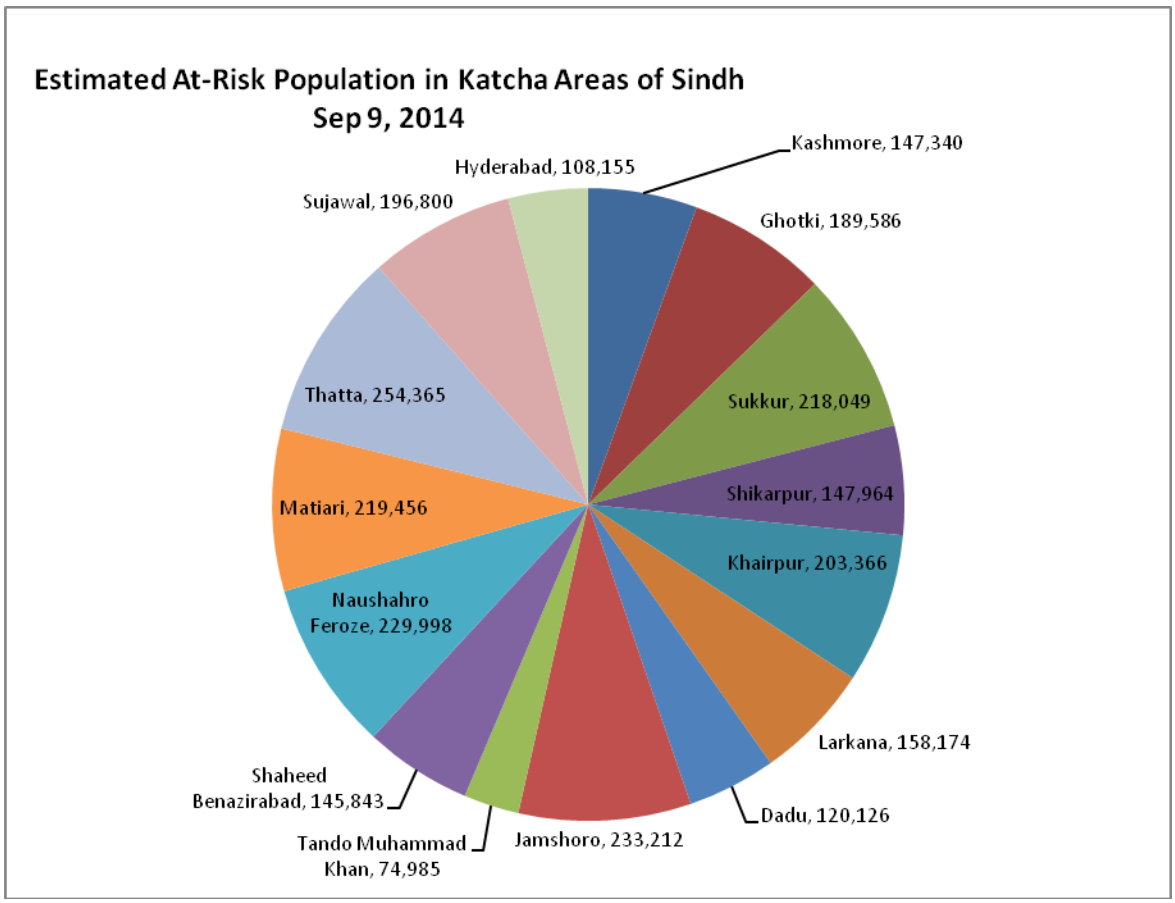
c. Pirara Muhalla

d. Station Muhalla

ANNEX – E

Estimated Population at Risk in Katcha Areas of Sindh; (Reported as of Sep 9, 2014)

District	At Risk Pop
Kashmore	147,340
Ghotki	189,586
Sukkur	218,049
Shikarpur	147,964
Khairpur	203,366
Larkana	158,174
Dadu	120,126
Jamshoro	233,212
Tando Muhammad Khan	74,985
Shaheed Benazirabad	145,843
Naushahro Feroze	229,998
Matiari	219,456
Thatta	254,365
Sujawal	196,800
Hyderabad	108,155
Total	**2,647,419**



S.No	District	Taluka	Vulnerable Union Councils	At-Risk Population in Katcha Areas
1.	Kashmore 147,340	Kandhkot	Dari (Ghouspur)	17404
			Haibat	18963
		Kashmore	Gublo	16440
			Badani	18494
			Gihalpur	20167
			Sodhi	20383
			Kashmore Colony-1	20239
			Khewali	15250
2.	Ghotki 189,586	Ghotki	HussainBeli	18775
			Kadirpur	26993
			Bagodeho	21246
			Ruk	17346
		Ubauro	Ranwat	30791
			Langho	23534
			WastiJiwan Shah	25364
			Khambra	25537
3.	Sukkur 218,049	New Sukkur	Bagerji	15551
			Arain	15431
			Tamachani	12,240

	PanoAqil	Sadhuja	18014
		Nauraja	19215
		Sangi	21364
		Hingoro	15875
	Rohri	Ali Wahan	16115
		Arore	18620
		Panhwar	24009
		LoungBhatti	22567
		Patni	19048
4. Shikarpur 147,964	Khanpur	GarhiThegho	19930
		MehmoodaBagh	19742
	Lakhi	Sehwani	18759
		Chak	17746
		Lakhi	16117
		Jehan Khan	11056
	GarhiYasin	Mirzapur	15850
		Amrote	16447
		JindoDero	12317

S.No	District	Taluka	Vulnerable Union Councils	At-Risk Population in Katcha Areas
5.	Khairpur 203,366	Sobodhero	Sagyoon	21580
			Pir Hayat Shah	19438
		Gambat	Agra	21479
			Ripri	15289
			Beharlo	19045
			Khemat	14138
		Kingri	Hadal Shah	21649
			Priyalo	24358
			Kot Mir Muha	21956
		Khairpur	Baberilo	24434
6.	Larkana 158,174	Ratodero	Bahman	23196
			Banguldero	24106
		Larkana	Akil	22178
			Phul	23098
		Bakrani	Purano Abad	20956
		Dokri	Bagi	24093
			Karani	20547
7.	Dadu 120,126	Dadu	Pat	22354
			Allahabad	19278
			Phulji Station	19153
			Monder	19877
			Sial	20749
		Mehar	Nao Goth	18715
8.	Jamshoro 233,212	Sehwan	Talti	22684
			Channa	19607
			Sehwan	19638
			Sehwan 1	18702
		Manjhand	Amri	18329
			Sann	18098
			Lakh	17547
			Manjhand	24951
		Kotri	Allah BachayoShoro	20954
			Jamshoro	20042
			Unerpur (Petaro Proposed)	13618
			Kotri	19042

S.No	District	Taluka	Vulnerable Union Councils	At-Risk Population in Katcha Areas
9.	Tando Muhammad Khan 74,985	Bulri Shah Karim	Saeedpur	22004
			MullanKatira	27292
			JahanSoomro	25689
10.	ShaheedBenazirabad 145,843	Kazi Ahmed	ShahpurJahania	19312
			Dulatpur	20956
			Said Kando	18043
			That	19965
		Sakrand	Gohram Mari	12134
			Bhura	8129
			Mahrabpur	24740
			Mariv	22564
11.	NaushahroFeroze 229,998	Kandiaro	MohabatDero	22076
			Kamaldero	21412
			Abad	21460
			Dabhro	24844
			Bhorti	19604
		NaushahroFeroze	Mithiani	22453
		Moro	Depareja	20942
			Lalia	27351
			FatooBalal	22814
			Gachero	27042
12.	Matiari 219,456	Saeed Abad	Saeed Abad	28991
		Hala	Bhanoth	25572
			Karam Khan Nizamani	26676
			Hala Old	26472
			Hala-2	23537
		Matiari	Sekhat	30531
			Matiari	26797
			Shah Alam Shah	30880

S.No	District	Taluka	Vulnerable Union Councils	At-Risk Population in Katcha Areas
13.	Thatta 254,365	Thatta	Jhurruck	17755
			Jimpir	20614
			Sonda	17897
			Chuto Chand	21264
			KalanKot	1867
			Thatta 1	20002
			Domani	19657
		KetiBander	KetiBander	25700
		Kharochan	Kharo Chan	25666
		Ghorabari	Khan	22008
			Kotri Allah Rakhio Shah	19309
			Mahar	21490
			Udassi	21136
14	Sujawal 196,800	MirpurBathoro	BachalGugo	17996
			Bano	19032
			Liakpur	18592
		Shah Bander	JongoJalbani	20207
			DoulatPur	19267
			Goongani	20362
		Jati	MureedKhoso	20101
		Sujawal	Bijora	20504
			Belo	22272
			Ali Bahar	18467
15.	Hyderabad 108,155	Hyderabad	MasuBhurgari	24362
			Hatri	29719
		Qasimabad	Qasimabad 4	25159
		Latifabad	Latifabad 5	28915

Total 2,647,419

ANNEX-F

FLOOD STORES WITH HQ ENGINEER 5 CORPS

S.#	ITEMS	QTY.
1.	Fiber Glass Boats	138
2.	Pneumatic Boats	10
3.	OBM 30 HP	80
4.	OBM 40 HP	53
5.	Life Jackets (All Types)	2000
6.	Search Light	10
7.	De-watering Pumping Set (All Types)	65
8.	Anchors	142
9.	Life Ring/ Buoy	173
10.	GPS	70
11.	Generator Sets	20
12.	Walkie Talkie Sets (ICOM)	10
13.	Water Proof Torch	215
14.	Paddles	318
15.	Rope 25 m roll	6300 m

ANNEX-F1

FLOOD RELIEF EQUIPMENTS PROVIDED TO PAKISTAN NAVY AND COMCOAST

S.No.	Equipment	Navy	COMCOAST	Total
1	Combo (Fish Finders / GPS Gram 421S)	02	--	02
2	Camera – COOLPIX AW110)	01	--	01
3	Goggles / Black Color	07	--	07
4	Fins (Pairs)	07	--	07
5	Under Water Flash Lights	04	--	04
6	Air Cylinder (Diving Cylinder 15 litres)	04	--	04
7	Regular (Diving Regular P-Synchro)	04	--	04
8	Pressure Gauge (Pressure Gauge Console 2)	04	--	04
9	Wet Suit (Body Fit)	04	--	04
10	Budy Lines	02	--	02
11	Jacket Master	04	--	04
12	Weight Belt with pockets	04	--	04
13	Diver Weight (soft weights)	04	--	04
14	Diver Hood (Standard)	04	--	04
15	Diver Gloves	04	--	04
16	Diver Boots	04	--	04
17	Diving Rope (Nyclone)	120 Ft.	--	120 ft.
18	Fiber Glass Boats (14 feet)	--	10	10
19	OBM 30 HP	--	10	10
20	De-Watering Machines	--	05	05
21	Generator	--	02	02

ANNEX-G

GOVERNMENT OF SINDH
PDMA / RELIEF DEPARTMENT

SUMMARY OF LOSSES / DAMAGES DUE TO _____
Date _____ at ----------hours

Sr.	District	Talukas Affected	Villages Affected	Population Affected*	Displaced Persons (DPs) **				Relief Camps Established	Persons in Relief Camps				Crops Area Damaged (Acres)	Persons Died				Persons Injured				Cattle Head Perished	Houses Damaged		
					Male	Female	Childern	Total		Male	Female	Childern	Total		Male	Female	Childern	Total	Male	Female	Childern	Total		Partially	Fully	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1								-					-					-				-				-
2								-					-					-				-				-
3								-					-					-				-				-
	GRAND TOTAL:				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*** The population affected is the over all affected population of the district.**
**** The Displaced persons are those who depend upon government assistance but do not reside in relief camp.**

Annex-H

DISTRICT _____

Three Hourly Rainfall Report

Dated: _____

Sr.	Taluka/ Area	Rainfall (09:00am-12:00pm)	Rainfall (12:00pm-03:00pm)	Rainfall (03:00pm-06:00pm)	Rainfall (06:00pm-09:00pm)	Rainfall (09:00pm-12:00am)	Rainfall (12:00am-03:00am)	Rainfall (03:00am-06:00am)	Rainfall (06:00am-09:00am)	Accumulative Rainfall (09:00am-09:00am)
1										
2										
3										
TOTAL IN DISTRICT:										

Duty Officer

ANNEX – i

DETAILS OF RELIEF CAMPS

S. No.	Division	District	Number of Relief Camps
1	Hyderabad	Hyderabad	29
2		Thatta	99
3		Dadu	78
4		T.M Khan	33
5		Tando Allahyar	86
6		Matiari	33
7		Jamshoro	43
8		Sujawal	57
9		Badin	26
Total			**484**
10	Mirpurkhas	Mirpurkhas	157
11		Umerkot	45
12		Tharparkar	102
Total			**304**
13	Sukkur	Sukkur	15
14		Khairpur	23
15		Ghotki	21
Total			**59**
16	Larkana	Larkana	48
17		Shikarpur	52
18		Kamber	08
19		Kashmore	43
20		Jacobabad	18
Total			**169**
21	Shaheed Benazirabad	S. Benazirabad	71
22		Sanghar	200
23		N. Feroze	207
Total			**478**
24	Karachi	South	26
25		Malir	06
26		West	12
27		Korangi	04
28		East	07
29		Central	17
30		Keamari	04
Total			**76**
Grand Total			**1570**

Government of Pakistan
Ministry of Aviation (Aviation Division)
Pakistan Meteorological Department
Sector: H-8/2, Islamabad.

Tel:051-9250364
Fax:051-9250368

ANNEX-J

Date: 7th June 2022

Outlook for Monsoon (JAS), 2022

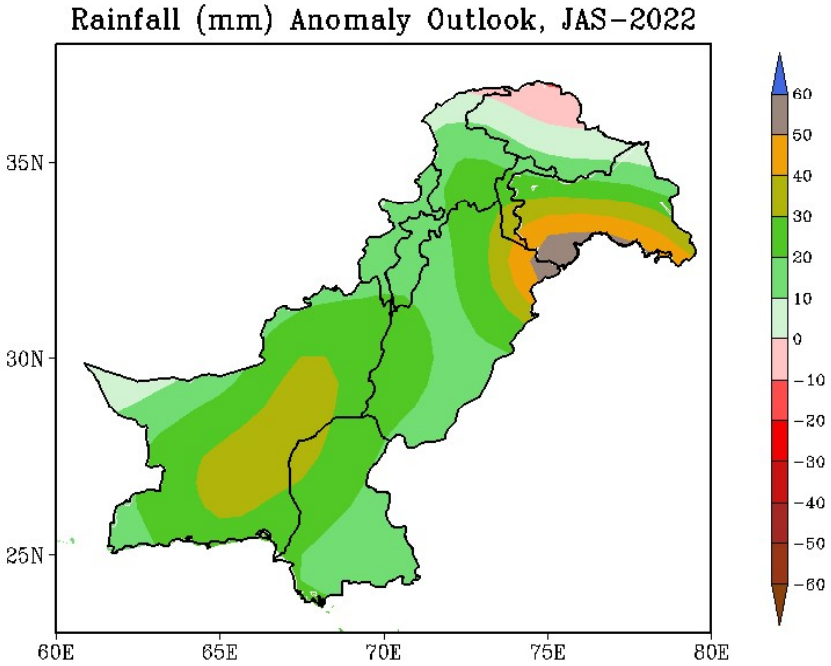
Synoptic situation:

During the monsoon season (JAS 2022), weak La-Niña conditions and negative phase of IOD is expected. Based on the global and regional circulation patterns, the outlook for monsoon 2022 in Pakistan is as under:

Seasonal Outlook:

Overall, a tendency for **above normal precipitation** is likely over the country during forecast season (JAS).
Monsoon onset is expected during the last week of June whereas pre-monsoon rains may occur from second week of June.
Monsoon rainfall is expected to be above normal over Punjab and Sindh whereas slightly above normal rainfall is expected over remaining parts of the country.
First phase (1st July to mid-August) of monsoon is expected to be wet as compared to the last phase (mid-August to end of September).

*Area weighted normal rainfall of Pakistan during Jul - Sep is **140.8 mm**.*

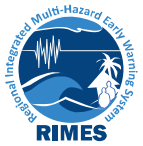


Impacts:

- Possibility of extreme hydro-meteorological events over catchment areas cannot be ruled out, that may generate riverine floods in the major rivers.
- Heavy rainfall events may trigger flash flooding in hilly areas and urban flooding in plain areas i.e. major cities of Sindh, Punjab, AJK and KP during the season.
- Above normal temperatures in high altitudes are likely to increase rate of snowmelt in the Northern Areas subsequently increasing the chances of base flow in the Upper Indus basin.
- Sufficient water availability for irrigation and power sectors will be a good impact.

Note: The current outlook is based on the May atmospheric conditions. Keeping in view the rapid changes in climate system dynamics, the monthly outlook will be updated during the last week of each month.

Annex-K



22nd Session of South Asian Climate Outlook Forum (SASCOF-22) and Climate Services User Forum (CSUF) 26-28, April 2022 (Online)

Consensus Statement on the Seasonal Climate Outlook over South Asia for the 2022 Southwest Monsoon Season (June – September)

Summary

Normal to above normal rainfall is most likely during the 2022 southwest monsoon season (June – September) over most parts of the South Asia. Geographically, above-normal rainfall is most likely along the foot hills of Himalayas, many areas of northwestern and central parts of the region, and some areas of east and southern parts of the region. However, below normal rainfall is most likely over some areas of extreme north, northwest, and south, and southeastern parts of the region. The seasonal rainfall is most likely to be normal or of climatological probabilities over the remaining areas of the region.

During the season, above normal minimum temperatures are likely over many areas along foothills of Himalayas, northern, northwestern and northeastern parts of the South Asia. Below normal to normal minimum temperatures are most likely over most areas of central, southern and southeastern part of South Asia. The seasonal minimum temperatures have climatological probabilities over remaining parts of the region. The seasonal maximum temperatures are most likely to be normal to below normal over most parts of the region except over extreme northwest and some areas of northern and northeastern parts of the region. Maximum temperatures have climatological probabilities over remaining parts of the region.

This regional climate outlook for the 2022 southwest monsoon season over South Asia has been collaboratively developed by all nine National Meteorological and Hydrological Services (NMHSs) of South Asia with the support from international experts at the 22nd session of the South Asian Climate Outlook Forum (SASCOF-22) conducted online. The process involved an expert assessment of the prevailing global climate conditions and forecasts from different climate models from around the world. The moderate La Niña conditions that prevailed over the Pacific since September remained at same strength in March/April 2022. Based on the global climate model forecasts, there is strong consensus among experts that the La Niña conditions are likely to prevail during the southwest monsoon season. It is recognized that the global climate model predictions prior to and during the spring season generally have noticeable uncertainty due to spring barrier in the seasonal predictability. It is also recognized that other regional and global factors as well as the intra-seasonal features of the region can also affect the seasonal climate patterns over the region.

For more information and further updates on the southwest monsoon outlook on national scale, the respective National Meteorological and Hydrological Services (NMHSs) may be consulted.

Introduction:

The climate outlook for the 2022 southwest monsoon season (June to September) was finalized during the 22nd session of the South Asian Climate Outlook Forum (SASCOF-22) held during 26-28 April 2022 via video conferencing in the backdrop of the current circumstances of Covid-19 pandemic prevailing in the world since early 2020. The session was attended by experts representing the National Meteorological and Hydrological Services (NMHSs) of nine South Asian countries as well as those representing several global and regional climate agencies including World Meteorological Organization (WMO), WMO Regional Climate Centre (RCC) Pune, Indian Institute of Tropical Meteorology (IITM), Met Office (UKMO), International Research Institute for Climate and Society (IRI), Regional Integrated Multi-hazard Early-warning System (RIMES), Japan Meteorological Agency (JMA) , Lead Centre of LRFMME, KMA etc. The online forum deliberated on various observed and emerging climatic features that influence the performance of the southwest monsoon, such as the El Niño-Southern Oscillation (ENSO) conditions over the equatorial Pacific, Indian Ocean Dipole (IOD), winter and spring Northern Hemisphere (NH) snow cover and land surface temperature anomalies. The key features of these conditions are as follows:

ENSO Conditions over the Pacific Ocean

The ENSO is one of the global scale climate phenomena that have significant influence on the year-to-year variability of the monsoon over South Asia. A neutral (cool) ENSO conditions were observed during May-July 2021. The (cool) ENSO conditions started strengthening during August and weak La Niña conditions were established by September 2021. Thereafter, the La Niña conditions kept strengthening to reach its maximum strength in December 2021. The La Niña conditions were slightly weakened in January and subsequently in February 2022, but slightly strengthened in March 2022. Currently, moderate La Niña conditions are prevailing over the Pacific. The latest global models forecast indicate that the La Niña conditions are likely to continue during the upcoming monsoon season.

IOD Conditions over the Indian Ocean

In addition to ENSO conditions over the Pacific, other factors such as Indian Ocean SSTs also have influence on the South Asian southwest monsoon. A positive

(negative) IOD is associated with a stronger (weaker) than normal monsoon over the region. At present, neutral Indian Ocean Dipole (IOD) conditions are prevailing over the Indian Ocean. The recent forecasts from coupled global models suggest that the negative IOD conditions are likely to develop during the monsoon season.

Snow Cover over the Northern Hemisphere

The snow-covered area over Northern Hemisphere as well as Eurasia was near normal (slightly towards positive side of the normal based on 1991-2020) during last few months (December 2021, January to March 2022). The northern hemisphere snow cover areas during February and March 2022 were 29th and 25th lowest ever during the respective months in the last 56 years. On the other hand, the Eurasian snow cover area 32th and 24th lowest ever during the respective months in the last 56 years. Winter and spring snow cover extent has a general inverse relationship with the subsequent Asian summer monsoon rainfall.

Regional Outlook for the 2022 Southwest Monsoon Rainfall over South Asia:

A regional climate outlook for the 2022 Southwest monsoon season rainfall over South Asia was prepared based on the expert assessment of prevailing large-scale global climate indicators mentioned above, experimental models developed during capacity-building workshops conducted for the South Asian countries in association with the previous SASCOF sessions, and experimental as well as operational long-range forecasts based on statistical and dynamical models generated by the NMHSs in the region and various other operational and research climate centres of the world.

There is a strong consensus among the experts that La Nina conditions are likely to prevail over the equatorial Pacific during the southwest monsoon season. Further, it is well-known that ENSO predictions at this time of the year generally have substantial uncertainty due to the so-called spring barrier in seasonal predictability. It is also recognized that in La Nina conditions are favourable for the normal to above normal southwest monsoon rainfall over most part of South Asia. However, it is important to note that ENSO conditions are not the only factor that determines the performance of Southwest monsoon over the region. Other relevant climate drivers such as the state of the Indian Ocean Dipole, tropical Atlantic sea surface temperatures, Eurasian land heating etc. are also important. The relative impact of all

these parameters needs to be considered to determine the expected state of the monsoon over the region which are implicitly considered by the dynamical climate models that underpin the present outlook.

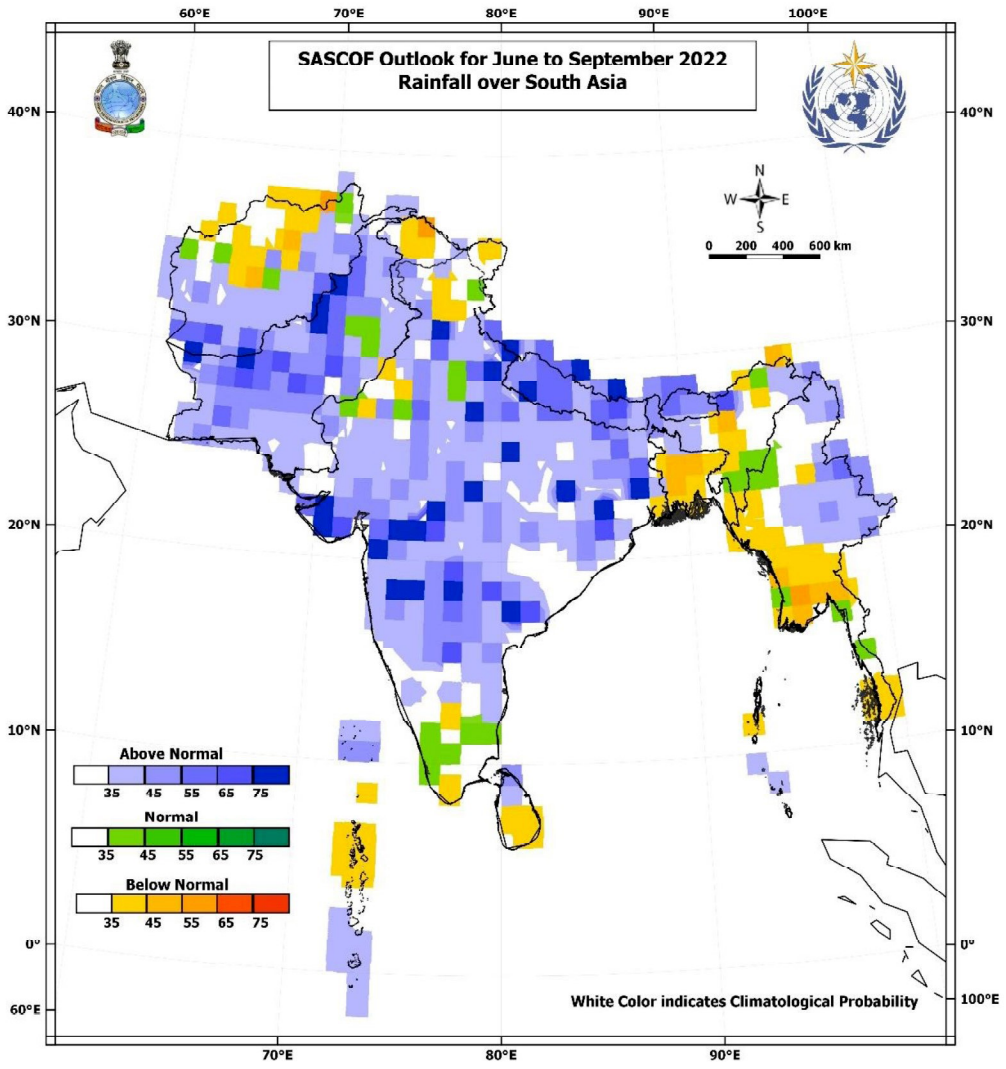


Fig.1a. Probability of the most likely category for the 2022 southwest monsoon rainfall over South Asia.

[1]Tercile categories have equal climatological probabilities, of 33.33% each.

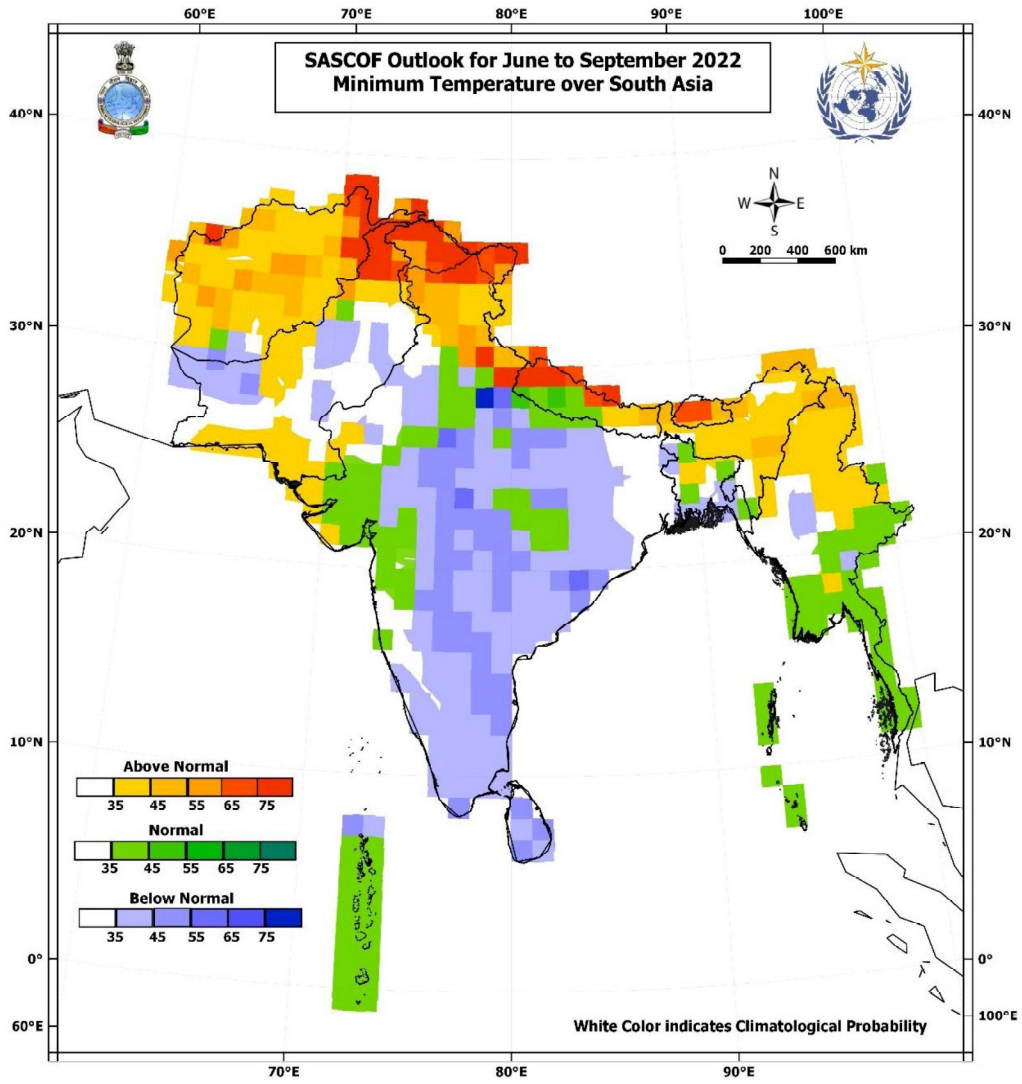


Fig.1b. Consensus outlook for the monsoon season (June to September 2022) Minimum Temperature and over South Asia.

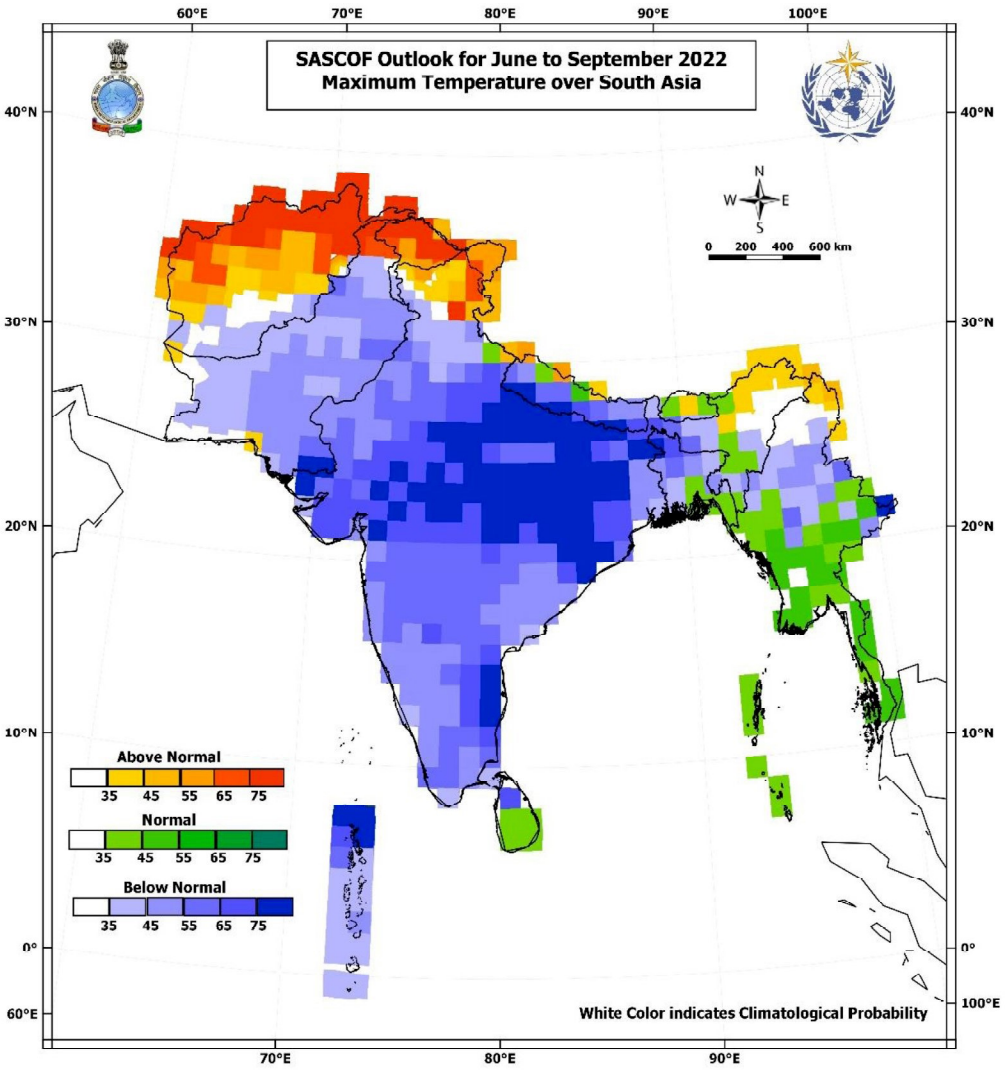


Fig.1c. Consensus outlook for the monsoon season (June to September 2022) Maximum Temperature and over South Asia.

The outlook for the southwest monsoon rainfall and Temperature (Minimum & Maximum) for the season (June to September) as a whole over South Asia is shown in Fig. 1**a-c.** The Figure illustrates grid wise most likely tercile category[1] as well as its probability for each of the 1° latitude x 1° longitude spatial grid boxes over the region. The box-wise tercile probabilities were derived by a synthesis of the available information and expert assessment. It was derived from an initial set of gridded objective forecasts and was iterated through collaborative assessment to synthesize predictive signals coming from reliable multiple sources.

The outlook suggests that normal to above normal rainfall is most likely during the 2022 southwest monsoon season (June – September) over most parts of the South Asia. Geographically, above-normal rainfall is most likely along the foot hills of Himalayas, many areas of northwestern and central parts of the region, and some areas of, east, and southern parts of the region. However, below normal rainfall is most likely over some areas of extreme north, northwest, and south, and southeastern parts of the region. The seasonal rainfall is most likely to be normal or of climatological probabilities over the remaining areas of the region.

Consensus outlook on minimum temperatures for June to September 2022 season suggests during the season, above normal minimum temperatures are likely over many areas along foothills of Himalayas northern, northwestern and northeastern parts of the South Asia. Below normal to normal minimum temperatures are most likely over most areas of central, southern and southeastern part of South Asia.

Consensus outlook on maximum temperatures for June to September 2022 season suggests that the seasonal maximum temperatures are most likely to be normal to below normal over most parts of the region except over extreme northwest and some areas of northern and northeastern parts of the region. Maximum temperatures have climatological probabilities over remaining parts of the region.

As the rainfall and Temperature during the southwest monsoon season depicts strong intra-seasonal variability, it is advised to watch the extended range forecasts along with updated seasonal forecasts for better decision making. The extended range forecasts for rainfall, temperature, cyclone genesis, MJO etc. over the region can be obtained from RCC, Pune website (http://rcc.imdpune.gov.in/exrange.html). These forecasts are updated every week.

Verification of rainfall outlook for JJAS2021 issued by SASCOF-19

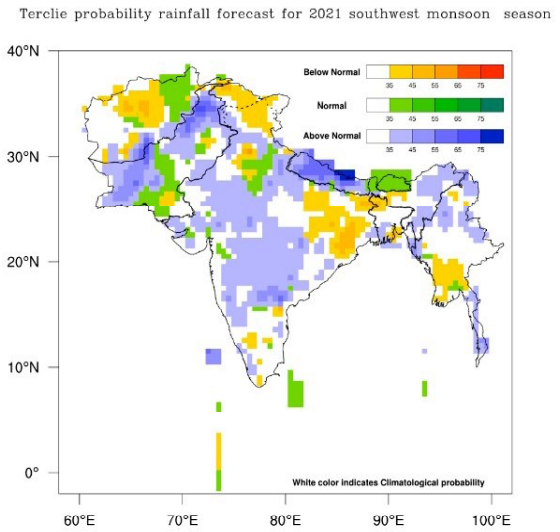


Fig 2a. Consensus outlook map for 2021 southwest monsoon rainfall over South Asia

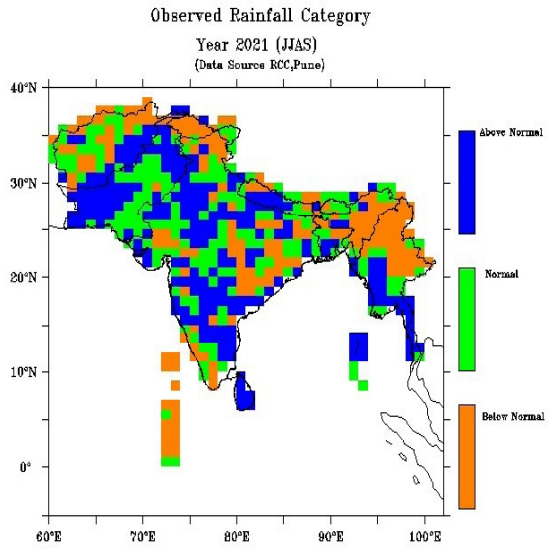


Fig 2b. Observed rainfall distribution during 2021 southwest monsoon season over South Asia expressed as the grid point rainfall tercile categories (base period 1982 to 2010). (Merged data set created using various gridded data sets like CHIRPS, IMD, BMD etc.)

The outlook for the 2021 southwest monsoon season (June to September) showed in Fig.2a suggested above-normal rainfall over some areas of the northwest South Asia, along the foot hills of Himalayas and northeast parts of the region, and many areas of central part of the region. region. However, below normal was forecasted over many areas over extreme northwest, north and some areas over north-eastern parts of the region. Normal rainfall was forecasted for the remaining areas of the region.

Fig.2b shows the observed rainfall distribution during the 2021 southwest monsoon season expressed in terms of tercile categories. It was seen that above normal rainfall was observed over the parts of north-western and central South Asia and foothills of Himalaya matched well with forecast. The below normal rainfall observed over north, extreme northwest, and central-east parts of South Asia also matched well with the forecast. However, there were differences between the observed and forecasted rainfall patterns over the northeast regions of South Asia, where above normal rainfall was forecasted.

Background of SASCOF

Climate predictions are of substantial benefit to many parts of the world in risk management and adaptation to the impacts of climate variability and change, and it is considered useful for countries having common climatological characteristics to come together and collaboratively assess the available prediction information to develop consensus outlooks. Recognizing this, regional climate outlook forums (RCOFs) were conceived with an overarching responsibility to produce and disseminate a joint assessment of the state of the regional climate for the upcoming season. Built into the RCOF process is a regional networking of the climate service providers and user sector representatives. In Asia, China has been coordinating the 'Forum on Regional Climate Monitoring, Assessment and Prediction for Regional Association II' (FOCRA II) since 2005, covering the entire Asian continent.

Asia is a large continent with large differences in the climatological settings on sub-regional scales. Therefore, WMO's Regional Association II (Asia) recommended sub-regional RCOFs devoted to specific needs of groups of countries having similar climatic characteristics. Implementation of the South Asian Climate Outlook Forum (SASCOF) in 2010 is a step in that direction with specific focus on the climate information needs of nations affected by the Asian southwest monsoon climate. The first three sessions of the SASCOF were held at Pune, India (during April) and its 4th session was held in April, 2013 at Kathmandu, Nepal. SASCOF-5 (April 2014) was again held in Pune, India.

SASCOF-6 (April 2015) was held in Dhaka, Bangladesh along with Climate Service User Forum (CSUF) for water sector. SASCOF-7 (October 2015), which was the first forum that focused on the winter season, was held in Chennai, India in conjunction with the first CSUF-Agriculture. SASCOF-8 (April 2016) was held in Colombo, Sri Lanka along with CSUF Water and CSUF-Health in parallel sessions. SASCOF-8 was also preceded by a capacity building training workshop on seasonal prediction for the operational climate experts of the South Asian countries. SASCOF-9 (September 2016) was held in Nay Pyi Taw, Myanmar in September 2016, in conjunction with the second CSUF-Agriculture.SASCOF-10 was held in Thimphu, Bhutan (April 2017) and SASCOF-11 was held in Male, Maldives (September 2017). The SASCOF-12 (April 2018) and associated training workshop on Climate Data Base Management and seasonal prediction were held in Pune, 2018. SASCOF-13 (September 2018) was held in Colombo, Sri Lanka. The SASCOF-14 and associated Pre-COF training workshop on seasonal prediction and CSUF was held in Katmandu, Nepal and hosted by Department of Hydrology and Meteorology (DHM). India Meteorological Department (IMD), World Meteorological Organization (WMO), Met Office, UK and Regional Integrated Multi-hazard Early-warning System (RIMES) co-sponsored the event held during 18-23 April, 2019.The SASCOF-15 and associated Pre-COF training workshop on seasonal prediction and CSUF was held in Thiruvananthapuram, India and hosted by India Meteorological Department (IMD). India Meteorological Department (IMD), World Meteorological Organization (WMO), Met Office, UK and Regional Integrated Multi-hazard Early-warning System (RIMES) co-sponsored the event held during 23-25September 2019.

The sixteenth session of the SASCOF (SASCOF-16) & Climate Service User Forum (CSUF) was held during 20-22 April 2020 via video conferencing in the

backdrop of the extraordinary circumstances of Covid-19 pandemic prevailing in the world. The session was jointly conducted by Bangladesh Meteorological Department (BMD), India Meteorological Department (IMD), World Meteorological Organization (WMO), Met Office, UK and Regional Integrated Multi-hazard Early-warning System (RIMES). SASCOF-16 session was also held on 8th June to issue update to the outlook issued in April. The seventeenth session of the SASCOF (SASCOF-17) & Climate Service User Forum (CSUF) was held during 23-24 and 28thSeptember 2020 being held online due to continuing COVID-19 pandemic. The session was jointly conducted by India Meteorological Department (IMD), World Meteorological Organization (WMO), Met Office, UK and Regional Integrated Multi-hazard Early-warning System (RIMES). The eighteenth session of the SASCOF (SASCOF-18) was held during 28th November 2020 being held online due to continuing COVID-19 pandemic. The session was jointly conducted by India Meteorological Department (IMD), World Meteorological Organization (WMO), Met Office, UK and Regional Integrated Multi-hazard Early-warning System (RIMES). The nineteenth session of the SASCOF (SASCOF-19) and Climate Service User Forum (CSUF) was held online during 26-28 April 2021, due to continuing COVID-19 pandemic. The session was jointly conducted by Meteorological Department (IMD), World Meteorological Organization (WMO), Met Office, UK and Regional Integrated Multi-hazard Early-warning System (RIMES). The twentieth Session of South Asian Climate Outlook Forum (SASCOF-20) and Climate Services User Forum (CSUF) was held online during 27-30 September 2021. The 21st Session of South Asian Climate Outlook Forum (SASCOF-21) was held online on 25 November 2021.

The present and 22nd session of the SASCOF (SASCOF-22) and Climate Service User Forum (CSUF) is again being held online due to continuing COVID-19 pandemic. The session was jointly conducted by Meteorological Department (IMD), World Meteorological Organization (WMO), Met Office, UK and Regional Integrated Multi-hazard Early-warning System (RIMES).

For preparing the consensus forecasts, the forecast products from various centres such as RCC Pune, JMA, CMA, WMO's Lead Centre for Long Range Forecasting –Multi-Model Ensemble (WMO LC-LRFMME), National Centre for Environmental Prediction (NCEP), USA, Météo France, Met Office UK, European Centre for Medium Weather Forecasting (ECMWF), Canadian Meteorological Centre (CMC), Bureau of Meteorology (BoM), Australia, International Research Institute for Climate and Society (IRI), USA, Japan Agency for Marine-Earth Science and Technology (JAMSTEC), APCC, and CPTEC, Brazil etc. were also considered.

The long-term historical patterns of the southwest monsoon rainfall over South Asia (Fig.3), characterized by remarkable spatial variability, provide the general reference points at the respective locations for the rainfall anomalies indicated in the outlook.

The long-term historical patterns of the Temperature (Minimum and Maximum) over South Asia during June to September (Fig.4 a & b), characterized by large spatial variability, provide the general reference points at the respective locations for the temperature anomalies indicated in the outlook.

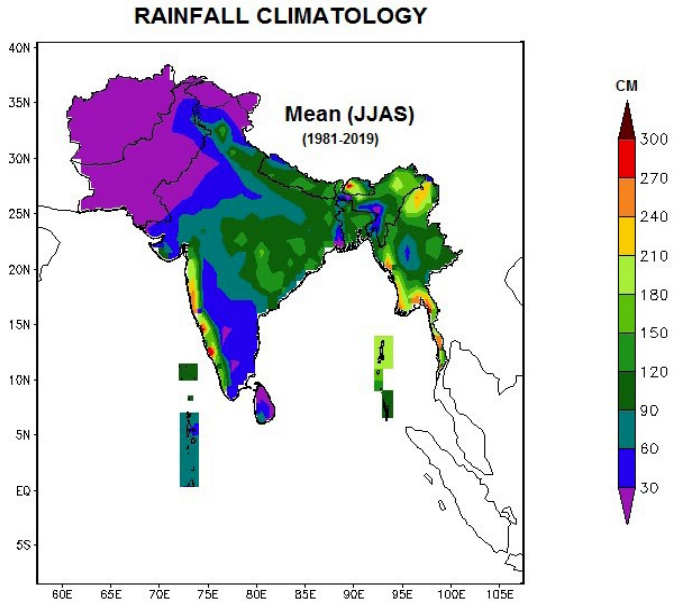


Fig.3 Rainfall climatology for the period 1981-2019 over South Asia
Source: Merged rainfall data over south Asia of RCC, Pune)

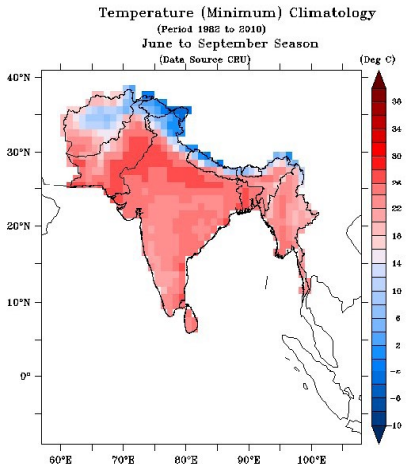


Fig.4 (a) Minimum Temperature climatology for the period 1982-2010 for June to September Season over South Asia

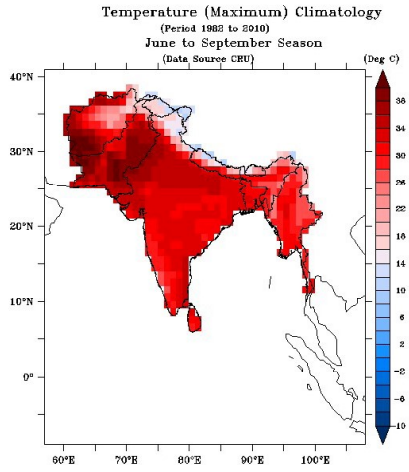


Fig.4 (b) Maximum Temperature climatology for the period 1982-2010 for June to September Season over South Asia

LIST OF DIVISIONAL COMMISSIONER / DEPUTY COMMISSIONER IN SINDH (Annex-L)

S.#	Name	DESIG.	District	Cell No.	P.S	Tel . Off	Tel. Res.	Fax.
			Commissioner Karachi Division					
1	Mr. M. Iqbal Memon	Commissioner	Karachi	0332-8448448	Mr.Ahmer Pasha 03452501767		9205610- 14 9205607	99205652 99205639
1	Mr. Raja Tariq Chandio	Deputy Commissioner	(East)	0333-7551535	Mr.Abid 0321-2569717	99231214 99231215		99230994
2	Mr.Saleemullah Odho	Deputy Commissioner	(west)	0300-3117083	Mr.Sajid 0300-2316508	99333177 99333172		99333173
3	Mr. Mukhtar Ali Abro	Deputy Commissioner	(Keamari)	0311-3233070				
4	Capt. R. Abdul Sattar Isani	Deputy Commissioner	(South)	0324-7700002 0333-7274177	Mr. sheraj 0345-3529616	99205644		99202296
5	Mr. Taha Saleem	Deputy Commissioner	(Central)	0300-2272274	M.Farhat 0300-2782112	99260037 99260038		99260036
6	Mr. Arfan Saleem	Deputy Commissioner	(Malir)	0321-2579970		99333785-6	Camp Office 99248100	35001301
7	Mr. Muhammad Ali	Deputy Commissioner	(Korangi)	0336-1313333	M. Amanullah Khan 0321-2613487	99333922		99333923
			Commissioner Hyderabad Division					
2	Mr. Nadeem ur Rehman Memon	Commissioner	HYDERABAD 022	0300-8377697	M.Niaz. 0333-2688946	9200112- 9200113	9200115 9200116	9200114 R.9201316
1	Mr. Fawad Ghaffar Soomro	Deputy Commissioner	HYDERABAD 022	0333-2273831	M.Ghulam Asghar 0315-5955190	9200244	9200570	9200976
2	Capt. Rtd Fareeduddinn	Deputy Commissioner	JAMSHORO 0223	0321-5222344	Mr.Ali Rajat 0302-3047710	870135 871942-44	871199 870135	871199 871954
3	Syed murtaza Ali	Deputy Commissioner	DADU 025	0300-8255104	Mr.Shah Zaman 0300-3069240	9200250- 9200251	9200251	9200252
4	Mr. Adnan Rashid	Deputy Commissioner	MATIARI 022	0331-5196104	Mr. Kamran Khaskheli	2760033 2760032	022-2760929	2760011
5	Mr. Wali Muhammad	Deputy Commissioner	TANDO A YAR 022	0333-7018669	Mr. Abdul Rehman Jawar 0302-	9250702-3	3891299	9250703
6	Mr.Yasir Bhatti	Deputy Commissioner	T.M.KHAN 022	0333-5727565	Mr. Azad Burti 0300-3070168	9260701-2-9	42160	9260709
7	Mr. Ghazanfar Ali Qadri	Deputy Commissioner	THATTA 0298	0334-3091426	Mr.Riyaz Shah 0333-2577734	920061 770359	920056 920057	R:920058 O:920069
8	Mr. Shahryar Gul Memon	Deputy Commissioner	SUJAWAL 0298	0300-8379517	Mr.jameel Memon 0315-3238883	510051	510178 510179	510051
9	Mr.Agha Shahnawaz Babar	Deputy Commissioner	BADIN 0297	0300-2003636	Mr.Ali Nawaz Kaimkhani 0333-	920013	861151 861048	861471 920021
			Commissioner Sukkur Division					
3	Mr. Ghulam Mustafa Phul	Commisioner	SUKKUR	0300-3362169	Mr.Allah Dino 0334-3286825	9310834 9310835	9310617 9310618	O:9310837 R:9310619
1	Mr.Javed Ahmed	Deputy Commissioner	SUKKUR 071	0333-7536576	Mr.Intizar 0300-2670508	9310601 9310600	9310601	9310602
2	Mr. Saifullah Abro	Deputy Commissioner	KHAIRPUR 0243	0300-3047585	Mr.Sikander Ali Shah	9280200 9280201	9280200 9251009	9280202
3	Mr.Muhammad Usman Abdullah	Deputy Commissioner	GHOTKI 0723	0345-5289861		661616 661675	661762	(Of)661677 (Re)651628

S.#	Name	DESIG.	District	Cell No.	P.S	Tel . Off	Tel. Res.	Fax.
Commissioner Shaheed Benazirabad Division								
4	Syed Mohsin Ali Shah	Commisioner	Benazirabad	0300-2435098	Mr.Imad Kundhar 0300-3214184	9370333 381069	PS M Qasim 03003028432	9370392 381068
1	Mr.Amir Hussain Panhwar	Deputy Commissioner	SBA 0244	0313-2778389	Mr.Zubair Mallah 0348-2376430	381494 9370337	9370334 -7 9370337	9370338
2	Mr. M. Tashfeen Alam	Deputy Commissioner	N. FEROZE 0242	0333-5811117	Mr.Abdul Aziz Ansari. 0300-2141493	920101 448256	920111 PS Ansari 03002141493	920103
3	Mr.Imran ul Hassan Khwaja	Deputy Commissioner	SANGHAR 0235	0321-3443440	Mr.Mazhar Qureshi 0315-3635550	920116-7	541781	920101
Commissioner Larkana Division								
5	Mr. Gahanwer Ali Laghari	Commissioner	LARKANA 074	0302-8223636	Mr.Ghulam Sarwar	9410244 9410245	9410294 9410295	(R)9410293 (O)9410394-5
1	Mr.Tariq Manzoor Chandio	Deputy Commissioner	LARKANA 074	0333-3792314	Mr.Mahesh Kumar 0333-7575682	9410318 9410243	9410337	9410336 9410293
2	Mr.Javed Nabi Khoso	Deputy Commissioner	QAMBER SHAHDADKOT 074	0313-5048048 0300-9253294	Mr.Abbas 0333-7552830	9411100	9411111	9411102 9411108
3	Dr. Abrar A. Jaffer	Deputy Commissioner	SHIKARPUR 0726	0333-7920911	Mr.Ghulam Sarwar 0345-6389798	920200 920201	920203 920201 920204	920202
4	Mr.Hafeez Ahmed Siyal	Deputy Commissioner	JACOBABAD 0722	0300-8379253	Mr.Abdul Whab 0300-3177187	921201-2	652020 653720	921003
5	Mr.Munawwar Mithani	Deputy Commissioner	KASHMORE 0722	0300-3415399	Mr.Ahmed Khoso 0333-7316644		570904 35843006	570902
Commissioner Mirpurkhas Division								
6	Syed Ejaz Ali Shah	Commisioner	MIRPURKHAS	0331-2865628	Mr.Ghulam Mustafa 0333-	9290052 9290053	9290057-4	9290055-59
1	Mr.Salamat Ali Memon	Deputy Commissioner	MIRPURKHAS 0233	0300-3064490	Mr.Khalid 0334-3131260	9290069 9290070	9290070	9290254
2	Mr. Tahir Ali Memon	Deputy Commissioner	UMERKOT 0238	0301-3564456	Mr.Rafi 0346-2125642	920019-20	920059 920060	920020
3	Mr.Muhammad Nawaz Soho	Deputy Commissioner	THARPARKAR 0232	0307-8223844	Mr.Ashraf 0333-2512488	920667 920825	920925 03332512488 Ashraf	920818