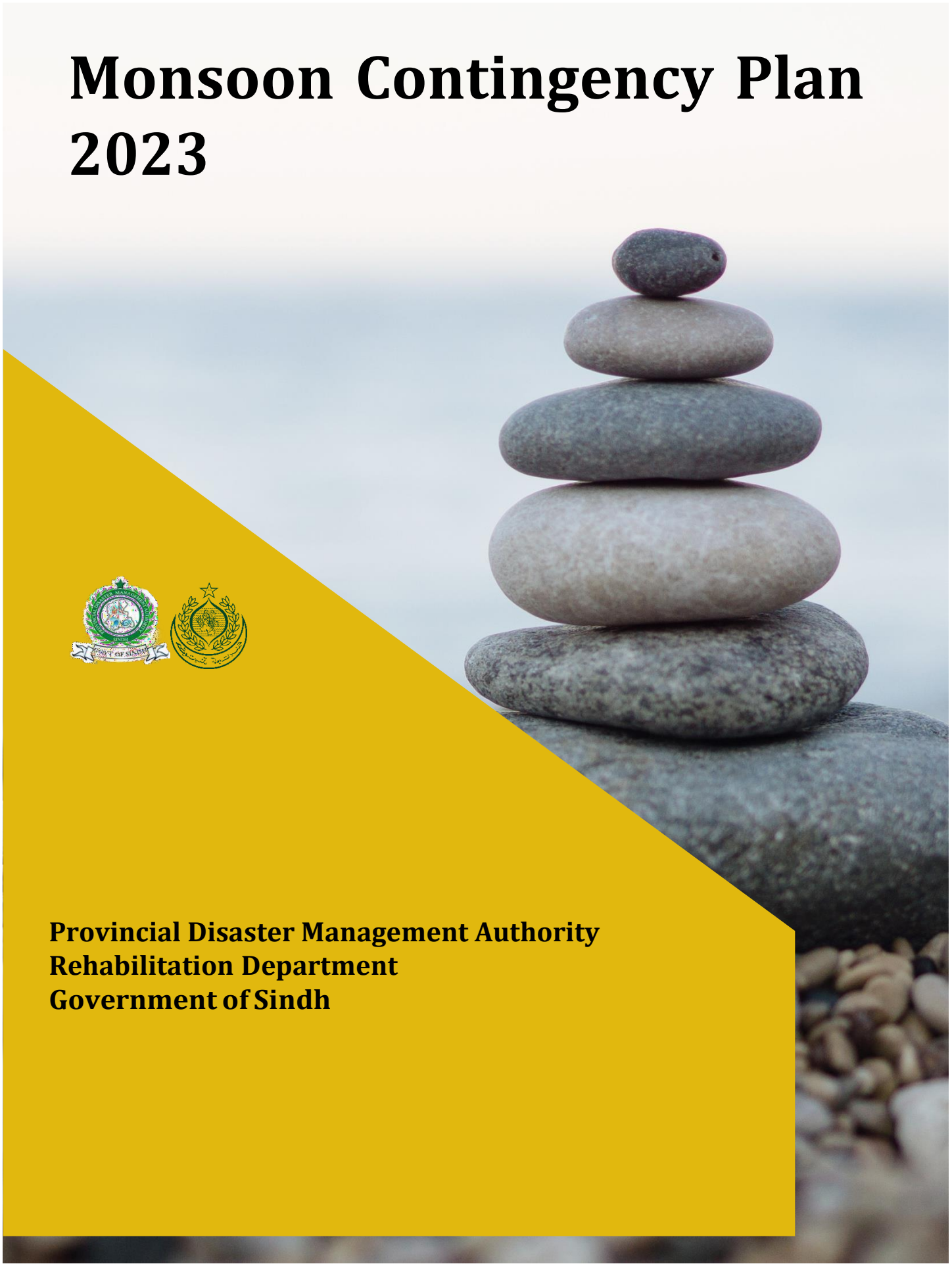
Monsoon Contingency Plan 2023



Provincial Disaster Management Authority
Rehabilitation Department
Government of Sindh

Monsoon Contingency Plan 2023

PROVINCIAL DISASTER MANAGEMENT AUTHORITY
REHABILITATION DEPARTMENT
GOVERNMENT OF SINDH

Advisor to CM for Rehabilitation & Relief's Message

Calamities have always posed formidable challenges to our society. It is imperative that we evolve our practices and approaches to mitigate the threats they bring. The Provincial Disaster Management Authority (PDMA) and District Disaster Management Authorities (DDMAs) were established to mitigate existing disaster risks and future challenges associated with climate change impacts.

I am pleased to inform you that PDMA, in collaboration with DDMAs, has developed an elaborate Provincial Monsoon Contingency Plan 2023 to address anticipated and any unforeseen hydrological disaster during monsoon 2023. This plan encompasses a comprehensive approach, analyzing potential hazards, vulnerability, available and projected resources, stakeholder roles and responsibilities, and identification of areas for improvement. It has been designed to be cost-effective, ensuring effective disaster management and response.

I take immense pride in presenting the Provincial Monsoon Contingency Plan 2023 to the people of our province. The plan aims to empower us to effectively manage any likely disaster during monsoon using a coordinated provincial approach. It is my firm belief that this plan will not only enhance our understanding of disaster management but also foster collaboration, coordination, and synergy among stakeholders.

I urge all concerned parties to diligently follow the guidelines set forth in the Provincial Monsoon Contingency Plan 2023 to safeguard human lives and protect our valuable assets. PDMA, in its ongoing commitment to improvement, will continue to assess and

adapt the plan based on practical experience and feedback, making it a dynamic and responsive document.

I am confident that through the materialization of such initiatives, we will witness significant progress in our disaster management endeavors and move closer to achieving our goal of a resilient Sindh. Let us stand united in our efforts to build a safer and more secure future for our people.

Haji Rasool Bux Chandio
Advisor to Chief Minister Sindh for Rehabilitation & Relief and Chairman,
Provincial Disaster Management Authority (PDMA) Board

Secretary Rehabilitation's Message

In recent years, we have witnessed the alarming effects of global climate change. Extreme weather patterns, rising temperatures, and changing climatic conditions have intensified the challenges faced by our region. Heatwaves, urban and riverine floods, cyclones, droughts, and other calamities have become more frequent and severe, leading to significant losses in human lives, agricultural land, infrastructure, and economic activities. It is essential that we acknowledge these realities and work towards buildingresilience in our communities.

Furthermore, it is important to recognize that disaster management is an ongoing process that requires continuous adaptation and improvement. Our department remains committed to enhancing our capacity to respond to future challenges. We will continue to assess the changing landscape of risks and vulnerabilities, update our strategies, and collaborate with relevant organizations and agencies to strengthen our resilience.

I would like to appreciate PDMA team and other departments who have contributed to the development of the Monsoon Contingency Plan 2023. Your expertise and dedication are instrumental in safeguarding our communities and ensuring their swift recovery in times of crisis.

The Monsoon Contingency Plan of 2023 provides clear guidelines and Standard Operating Procedures (SOPs) for all stakeholders involved, facilitating coordinated efforts and efficient resource allocation. I would like to invite all the stakeholders to

Embrace this plan as a guiding tool for a resilient future. Together, we can navigate the uncertainties of climate change and build a safer and more sustainable province for generations to come.

Parvez Ahmed Seehar
Secretary to Government of Sindh
Rehabilitation Department

DG PDMA's Message

The current Monsoon Contingency Plan, developed in close coordination with the Provincial Government line departments and District Disaster Management Authorities, highlighting the crucial role of the Provincial Disaster Management Authority in mitigating the impacts of heavy monsoon rains and flood-like disasters. This comprehensive plan comprises an analysis and operational framework, including well-defined Standard Operating Procedures (SOPs) for various stakeholders, making it attractive to both planners and implementers.

In the face of global warming and changing climatic conditions, our Authority encounters multidimensional challenges. These challenges range from the devastating effects of heatwaves, drought, urban and riverine floods, and flash floods, etc. These events often trigger emergencies of various categories, resulting in substantial losses of human lives, land, crops, infrastructure, and economic activity. We have witnessed the magnitude of such disasters in the past, including the super floods of 2010 and the heavy rains of 2022. While we hope to avert any such occurrences, it is crucial to acknowledge that the intensity and severity of these events may increase in the future due to changing weather patterns and climatic conditions.

To mitigate and minimize the risks associated with changing climatic conditions and monsoon events, the Provincial Monsoon Contingency Plan of 2023 has been meticulously prepared. This plan takes into account the vulnerabilities, risks, and hazards posed to the communities. It also addresses the immediate caseload that must be addressed in the event of an emergency situation. I am confident that in the face of

any unwarranted monsoon event, this plan will serve as a guiding tool for decision-makers across the province, leading us towards a more resilient Sindh.

I would like to express my gratitude to all the stakeholders, government departments, and district authorities who have contributed to the development of this Monsoon Contingency Plan. It is through our collective efforts that we can effectively respond to emergencies and safeguard the lives and well-being of our communities.

Let us unite in our commitment to disaster resilience and work together towards a safer and more secure future for the people of Sindh.

Syed Salman Shah
Director General, (PDMA) Sindh

Preface

Disaster and emergencies disturb the normal course of life, damage properties, cause human and crop loss, interrupt livelihood and bring many long-term domino and perpetual effects. In prevailing socio-economic conditions, the impacts of such events affect in different forms for years. Without argument, the best approach in managing disasters is implementation of disaster risk treatment and reduction strategies. At times implementation of disaster risk treatment and reduction is constrained by financial resources, physical barriers, line of action by stakeholders and communities at risk and various other factors such as poverty and lack of alternative resources etc. As a matter of fact, it is very true that development is essential for growth and prosperity, but at the same time development brings embedded disaster risks because somehow, development alters nature and alternation requires equivalent alternatives to continue its course. If a waterway is changed for any reason, it will require alternative to convey water safely to natural destination. If we fail to provide substitutes, it will cause flooding along surroundings. Therefore, both development and disaster risk run parallel, and for sustainable development, it is essential to provide substitute to nature to run on its course. In addition, all human developed systems have certain capacity and if any event occurs near to or beyond the capacity of the system, the system loses the effectiveness. For example, Left Bank Outfall Drain has a certain design discharge, and it breaches or overtops when water exceeds the design limits. In short, every human made system has residual risks, and the system collapses once thresholds are reached or crossed. Disasters management is conducted holistically i.e., resources, safety systems, preventative measures and above all, disaster risk perception of all stakeholders matters a lot in improving efficacy of disaster management and risk treatment.

In Sindh province, physical properties such as natural topography (low natural gradients resulting in poor drainage), effects of climate change, alteration of nature without substantial substitute, low disaster risk perception of stakeholders and communities, lacking or inadequate safety systems and other related factors combinedly turn hazards into disasters and repetitive prolonged disturbance. Within all negative and positive circumstances, it is important to plan for untoward situations to keep life

or bring life back to normal in the shortest possible time. This is the key and fundamental objective of contingency planning.

Each year's monsoon rains and waters in Indus River bring pros and cons. If both rain and water in Indus are high or excess, the drainage systems are overwhelmed and effects manifest in riverine and urban flooding. Each year PDMA Sindh prepares provincial contingency plan in collaboration with district disaster management authorities and other line departments. The resources are prepositioned to manage any likely unwanted situation. This year's plan i.e., Monsoon Contingency Plan 2023 has been redrafted on modern lines with science and technological support. The database prepared in Disaster Management Information System (DMIS) of PDMA has been used to model likely situations. In addition to DMIS database, maps prepared under National Flood Protection Plan IV have been used to generate different riverine flood scenarios. Likewise, natural depression / low lying areas have been identified to establish linkages for urban flooding across the Province. In addition, case load scenarios, identification of shelter locations and other resources have been worked out for rapid and effective response and necessary preparedness before onset of disaster or emergency.

It is important to note that, effectiveness of this plan relies on conjunctive use of District and Provincial Disaster Management Plans and Disaster Management Policy prepared by PDMA Sindh. It is anticipated that, once all gears are aligned, collective and effective disaster management shall be achieved, and results shall be reduced losses and less disturbance to patterned life.

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Chapter 1: Overview of Floods in Sindh

1.1 Physiographic and Climatic Setting of the Province

Topographically, Sindh consists of three parallel belts extending from north to south: the Kīrthar Range on the west, a central alluvial plain bisected by the Indus River, and an eastern desert belt. The Kīrthar Range is composed of three parallel tiers of ridges, has little soil, and is mostly dry and barren. The fertile central plain constitutes the valley of the Indus River. This plain is about 580 km long and about 51,800 square km in area and gradually slopes downward from north to south. The eastern desert region includes low dunes and flats in the north, the Achhrro Thar ("White Sand Desert") to the south, and the Thar Desert in the southeast.

Sindh has a subtropical climate and experiences hot summers and cold winters. Temperatures frequently rise above 46°C between May and August, and the average low temperature of 2°C occurs in December and January. Annual precipitation averages about 180 mm, falling mainly during July and August.

1.2 Water Resources

The major and perennial water resource of the Province is Indus River which originates in Himalaya and terminates in Arabian Sea, while crossing various gorges and plains along its route. Figure-1.2 shows the basin of the mighty Indus River. The Indus River does not only provide surface water which feeds the canals for irrigation and consumed for domestic and industrial purposes but at the time it recharges the aquifer to maintain the groundwater use.

Besides, Indus River, rain is other source of fresh water which fill the surface resources including lakes and temporary ponds, supports rain feed agriculture specially in Kachho and Thar. Manchar, Hamal, Keenjhar, Haleji, Chotiari Dam are major perennial lakes. Various other small dams in rain feed areas have been constructed to conserve rainwater for later use. Non-perennial / seasonal rivers and streams emanate from Khirthar range and flowing water recharge the aquifer and to some extent water is used for agriculture

purposes. Delay action dams are built on major nonperennial rivers and streams to recharge aquifer and contain water for later use.

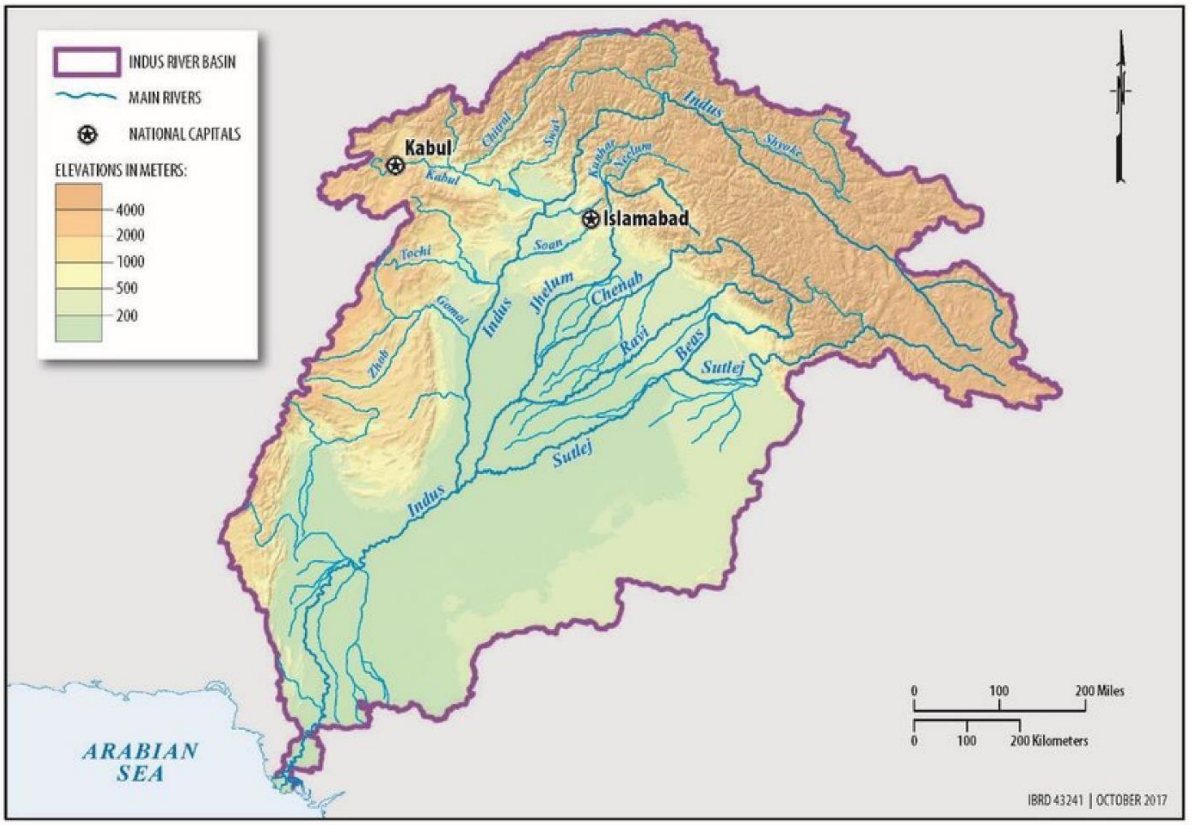


Figure 1.2. Indus Basin

1.3 Topography and Natural Drainage

The topography of the Province is flat except for the hilly Khirthar range in the west and sand dunes in Thar desert. The central fertile plains are formed by alluvial deposits by Indus River. Landscaping of the Province is mostly done by seismic activity in historic past and Indus River. Having flat topography, the Province bears low gradient and poor drainage. By virtue of low gradient, Indus River possesses a high tendency of channel migration and flows in braided channels. It is believed that once Indus off-loaded in Arabian Sea through 17 channels. After construction of barrages and canal irrigation over Indus, the River is restricted to present flood plain which is bounded by flood protective embankments for protection of surrounding lands. A topographic map of the Province is shown in Figure-1.3.1. Remnants of Indus in the form of channels and lakes are still present across the historic courses. Most of the abandoned courses are presently

converted to irrigation channels, oxbow lakes and depression are either altered and used for agriculture purposes or are part of the local drainage system.

Natural drainage is an integral part of any landscape. It naturally conveys water to safer deposition. Rivers, streams, depression all form the natural drainage. Natural drainage systems are composed of various smaller branches or collector drains which collect local water and connect it with larger or main trunk of the system. Main trunks or major rivers normally flow towards the sea to offload the water. The Indus is the main trunk of drainage for Sindh to carry water to dispose of in Arabian sea, however, practically almost none of the surface runoff generated in the Province gets into Indus due to embankments and various other structural barriers i.e., roads, railways, irrigation network all along the course. When it rains in Sindh, water on right bank of Indus naturally inclined to flow towards Manchhar lake via different routes, while on left bank, water is distributed in depressions, LBOD system drains and or diverted to irrigation channels. The surface runoff in Thar desert accumulates in depressions which subsequently feed life in the desert. Drains of lower Khirthar range either directly contribute to sea e.g., Malir and Lyari rivers or become part of Indus at different locations. While upper Khirthar and shared basins of Balochistan flows to Hamal and Manchhar lakes and at later stage become part of Indus through Aral Manchhar canal. The experience and evidence suggest that drainages on left and right banks of Indus undergo pressure and overwhelm causing flood in surroundings. Natural drainage of the Province is shown in Figure-1.3.2.

1.4 Characteristics of Indus River and Flood Plain

Sindh province lies in tail of the Indus River, hence deltaic characteristics of any river system are predominant in the Province i.e., low flow velocity, more silt deposition, river migration tendency, river flows in braided channels etc. River channels are shallow with almost little or no formal banks. During floods, water surpasses riverbanks and inundation water levels become equal to or higher than surrounding lands. In view of these natural characteristics, after construction of barrages the river was bounded by

embankments for protection of settled areas from flooding. Due to equal or higher water levels in comparison to surrounding lands, flood water never connects back to the river if any breach occurs in flood embankment. This is why floods of high, very high and super categories are always high risk in the Province.

Natural land surface features such as oxbow lakes, yazoo channels, silt deposit / dunes wild bushes, shrubs and trees were once dominant in flood plain and large tract of land was reserved for forests. The present condition of plain has changed due to various human interventions. Currently, flood plain is dominantly used for agriculture purposes and various lateral structures such as private embankments (within flood plain), roads, and construction of bridges have greatly altered its characteristics. The Landuse map of flood plain is shown in Figure-1.4.

Major impacts of these developments can be summarized as;

- The forest cover was a natural barrier against erosion and to some extent was protection for embankments. Transition from forest cover to agriculture has disturbed the natural barrier.
- The oxbow lakes and depression are either leveled or used for agriculture purposes which once used to distribute flood water. This change has altered the flow pattern in plain.
- The construction of bridges over the river has changed the lag time and flow patterns. This results in increased flood discharge time and pressure on flood protective infrastructure.
- Increased human interaction within flood plain has compromised the strength and efficacy for flood protective infrastructure.

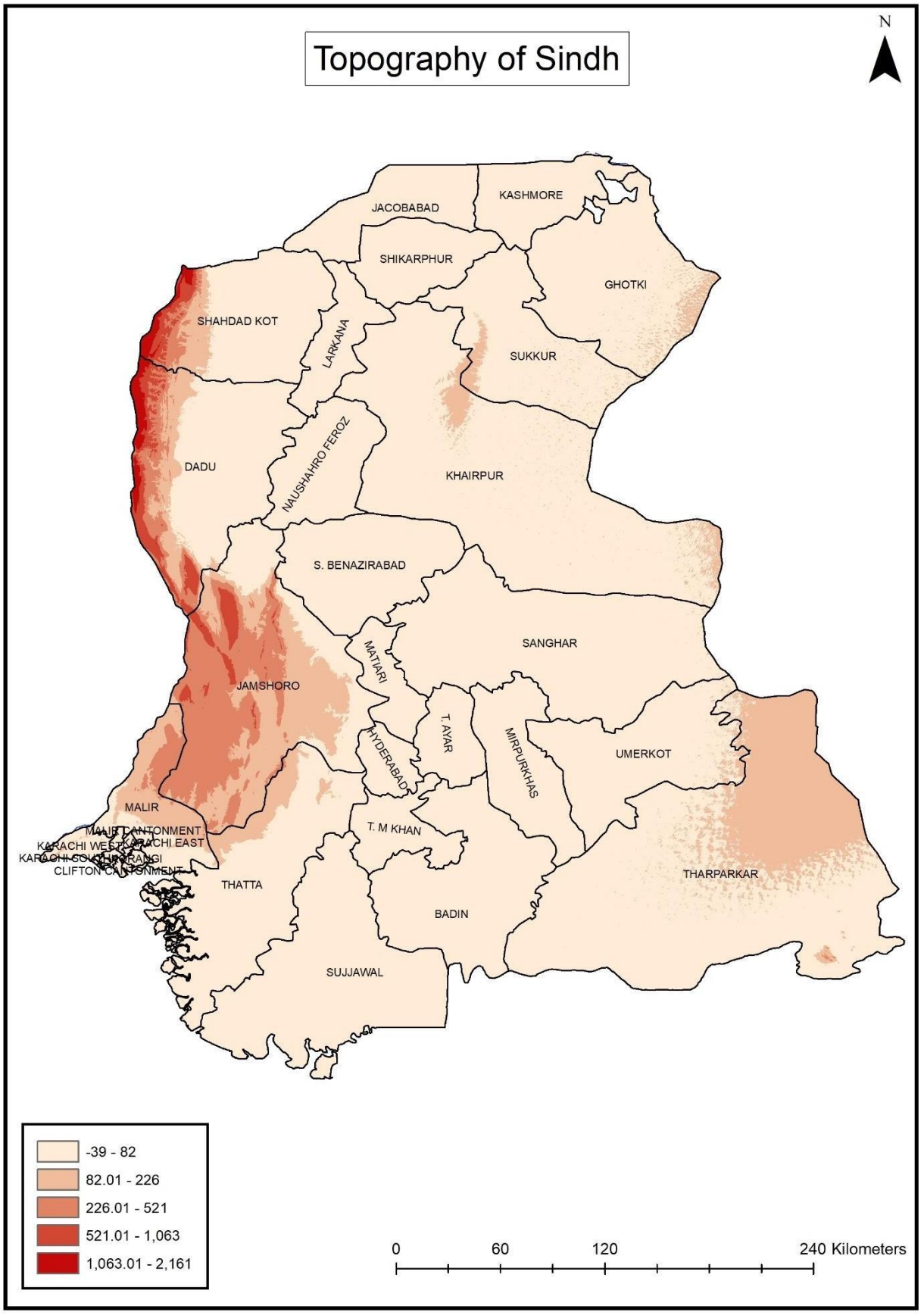


Figure 1.3.1 Natural Topography of the Province

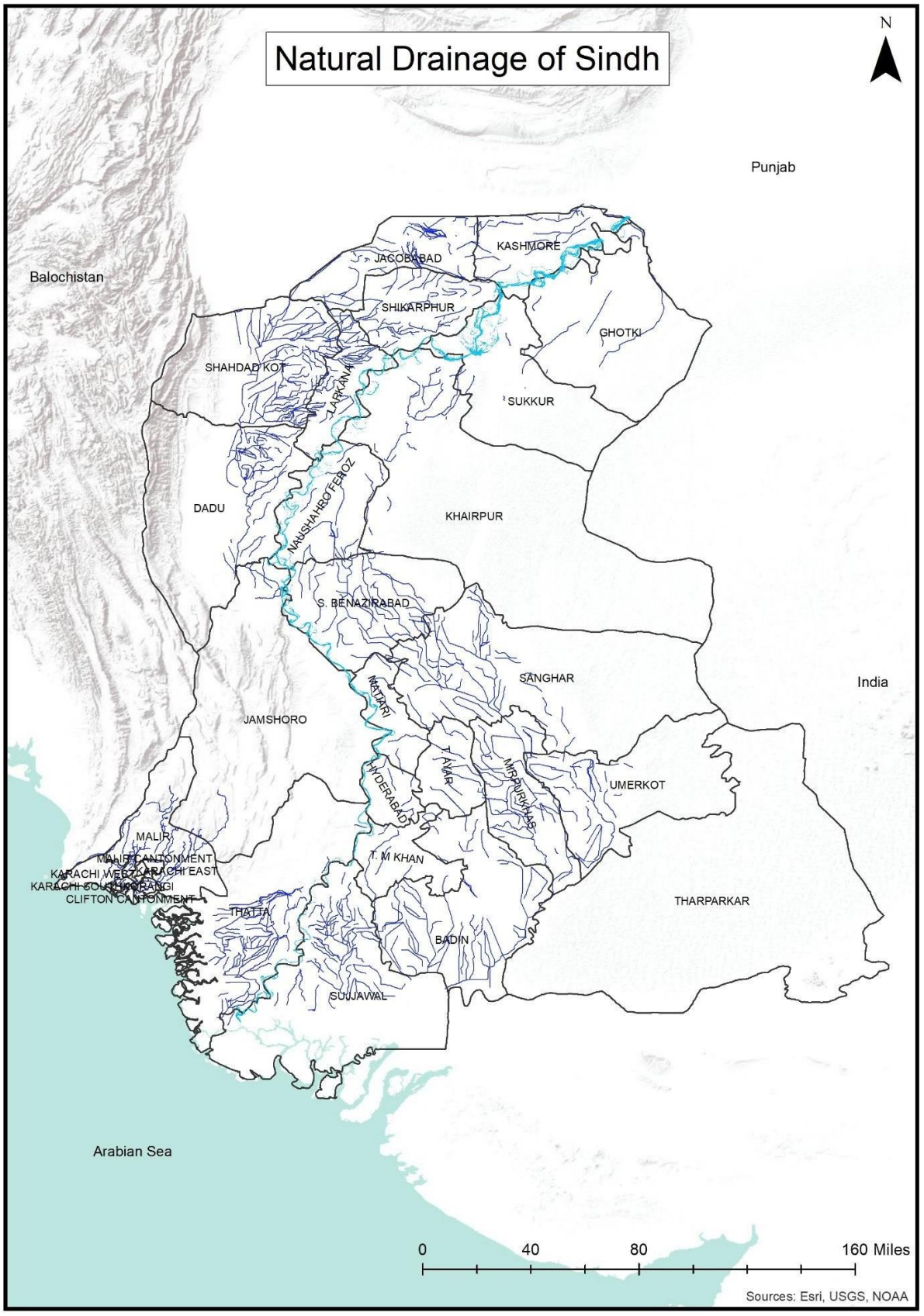


Figure 1.3.2 Natural Drainage of Province

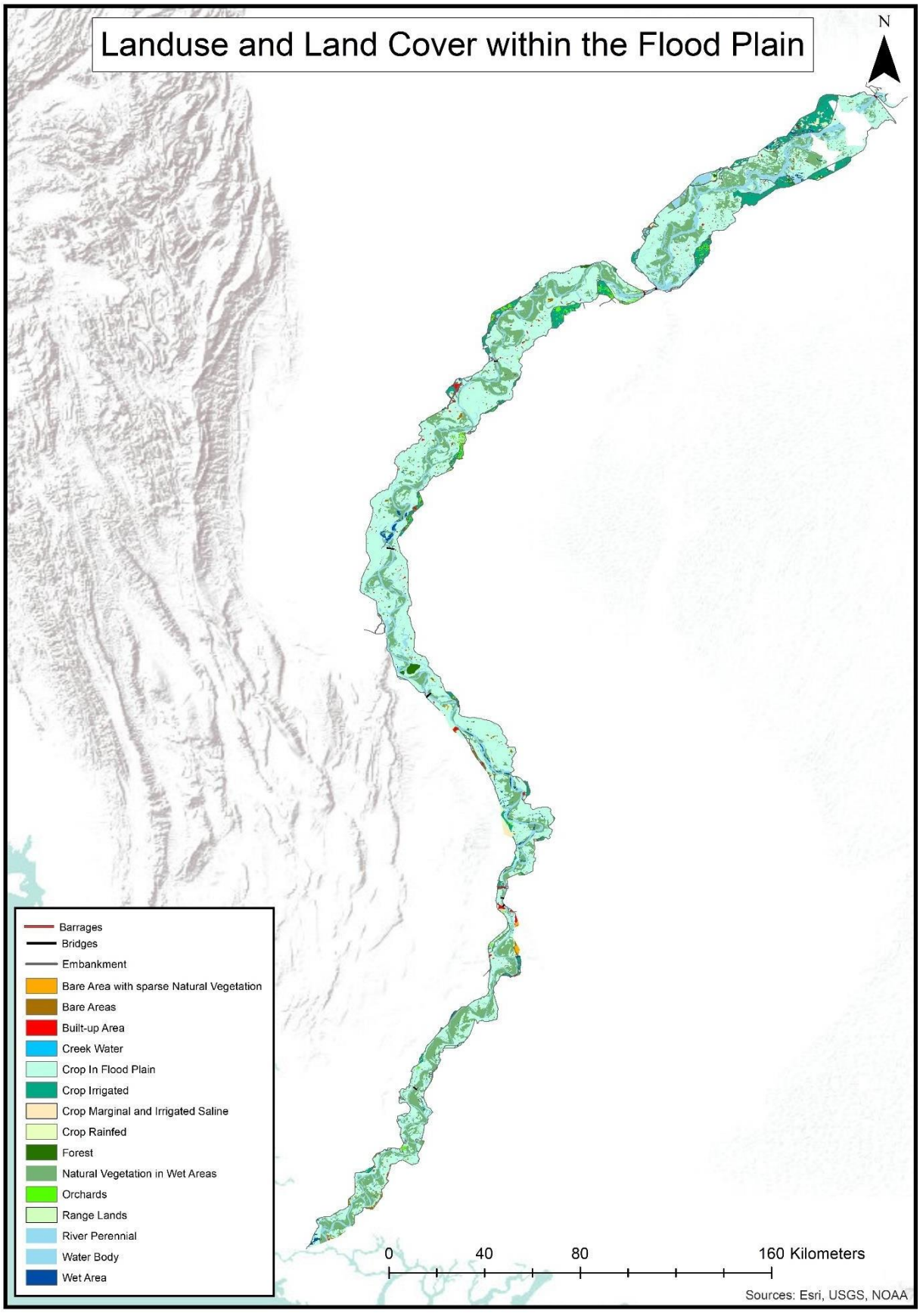


Figure 1.4 Landuse and Landcover within the Floodplain

1.5 Types of Floods in Sindh

1.5.1 Fluvial or River Floods

Major fluvial floods occur in Indus River particularly during monsoon season from July to September. Historical records suggest that high water flows in Indus is converging effect of snow / glacial melt and rains in upper Indus basin and northern parts of the country. Depending on discharge at different barrages, floods are categorized as medium, high, and super floods. Floods are a normal phenomenon and where there is a river, there is an embedded chance of flooding. Regarding Indus River floods in Sindh, major risk is associated with failure of flood protection infrastructure. If any embankment is breached, it has potential to produce disturbance over large areal extent. On the other hand, even if flood of super category passes safely to Arabian Sea, all remains normal except population living within flood plain. As a matter of fact, the population living in floodplain and livelihood sources are always naturally at flood risk.

Other fluvial flood sources in Sindh are seasonal rivers including Malir, Lyari, Nai Gaj, Nai Baran and various other streams emanating from Khirthar range. Depending on quantum of precipitation in respective catchments, these rivers can generate flash floods in their courses. During 2020 heavy rains, excessive water in Malir river spilled over and gushed into surrounding villages causing damage and losses.

1.5.2 Pluvial or Flash Floods

Pluvial floods in Sindh mainly occur in Khirthar range. Most of the drainage of Khirthar range share waters from Balochistan province i.e., catchment of Nai Gaj is shared and lies in Khuzdar district of Balochistan. In case of heavy rains over catchment in Khuzdar, water gushes through Nai Gaj and offloads in Kachho plains in district Dadu. Flash flood normally occur with little or no reaction time and cause great damages and losses as it happened during 2020 in Kachho.

1.5.3 Coastal Floods

Coastal floods are normally accompanied by cyclones or any major weather disturbance in Arabian Sea. Almost entire coastal belt of Sindh is prone to coastal flooding during high seas or abnormal weather.

1.5.4 Inland or Urban Floods

This most frequent and major disturbing phenomenon occurs in major cities of the Province during moderate to heavy rains. Major reasons include no or inadequate storm water drainage in cities, disconnected natural slopes, inadequate bridge / culverts in roads and alike issues.

1.5.5 Secondary Floods or domino effects

These floods are normally caused by breaches or overtopping in manmade drainage systems during excessive waters in drainage system or chocking of drains. These secondary flooding occurs on both sides of Indus particularly in Left Bank Outfall Drain (LBOD) system and Main Nara Valley Drain (MNVD).

Geographical Distribution of Hydro-Met Hazards in the Province is shown in Figure-1.5.

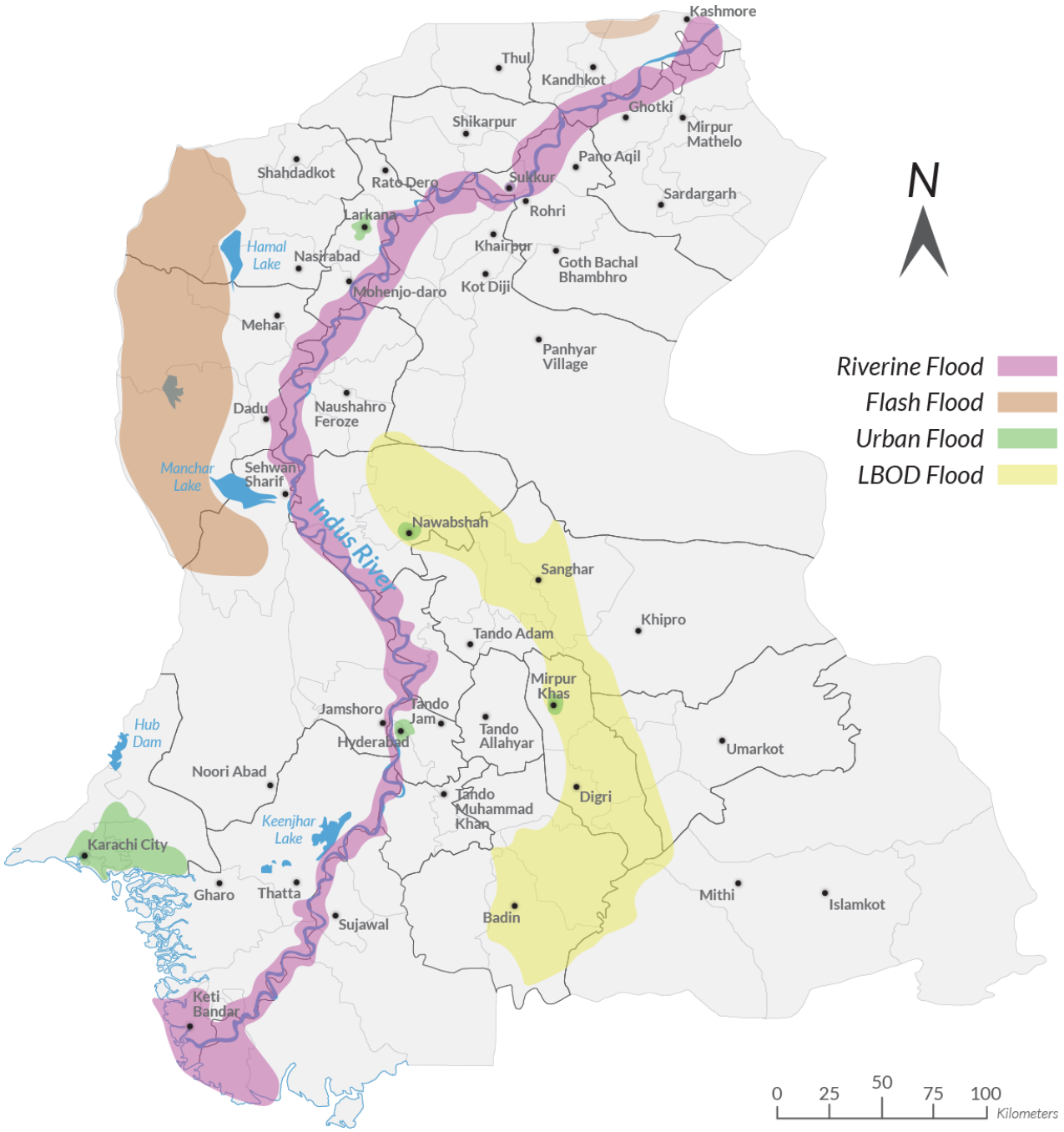


Figure 1.5 Geographical Distribution of Hydro-Met Hazards

1.6 Flood Levels and Categories at Barrages of Sindh

Before reaching territorial land of Sindh province, the Indus travels through various barrages and other lateral structures. The flow is monitored by Flood Forecast Division of PMD and provincial irrigation departments. Lag time between the barrages and other

prominent structures is calculated and sufficient reaction time to act according to discharges is available for Sindh. Depending on discharge at barrages and keeping in view barrage discharge capacity flood levels and categories have been defined by Irrigation Departments. Following is the nomenclature of floods at the barrages of Sindh.

Guddu Barrage:

S No	Flood Category	Flow Ranges(cusecs)
1	Medium Flood	200,000 to 350,000
2	High Flood	350,000 to 500,000
3	Very High Flood	500,000 to 900,000
4	Super Flood	Above 900,000

Table 1.6.1 Discharge Flow of Guddu Barrage

Sukkur Barrage:

S No	Flood Category	Flow Ranges(cusecs)
1	Medium Flood	200,000 to 350,000
2	High Flood	350,000 to 500,000
3	Very High Flood	500,000 to 900,000
4	Super Flood	Above 900,000

Table 1.6.2 Discharge Flow of Sukkur Barrage

Kotri Barrage:

S No	Flood Category	Flow Ranges(cusecs)
1	Medium Flood	200,000 to 300,000
2	High Flood	300,000 to 450,000
3	Very High Flood	450,000 to 650,000
4	Super Flood	Above 800,000

Table 1.6.3 Discharge Flow of Kotri Barrage

1.7 Past Flow Trends at Barrages

Observed peak discharge data from 1992 to 2022 has been analyzed to understand natural trends at different barrages of Sindh. The discharge graphs of Guddu, Sukkur and Kotri are shown in graph 1.7.1, 1.7.2 and 1.7.3 respectively. During this period, Guddu Barrage encountered 3 Super floods, 11 Very High, 4 High and 11 Medium floods. The period from 1992 to 1998 remained wet and successive high to very floodsoccurred during this period. After interval of 12 years, the barrage encountered

Super Flood in 2010. The trend shows that, on average, a Super Flood occurred after 10 years at Guddu Barrage, while Very High after 3, High after 8 and Medium flood after 3 years. During the period, Sukkur Barrage encountered 3 Super Flood, 8 Very High, 4 High and 8 Medium Floods. The average interval between super floods is 10 years, while Very High, High, and Medium floods occurred after 4,8,4 years respectively. During the period, Kotri Barrage encountered 2 Super Flood, 4 Very High, 5 High and 7 Medium Floods. The average interval between super floods is 16 years, while Very High, High, and Medium floods occurred after 8,6,4 years respectively.

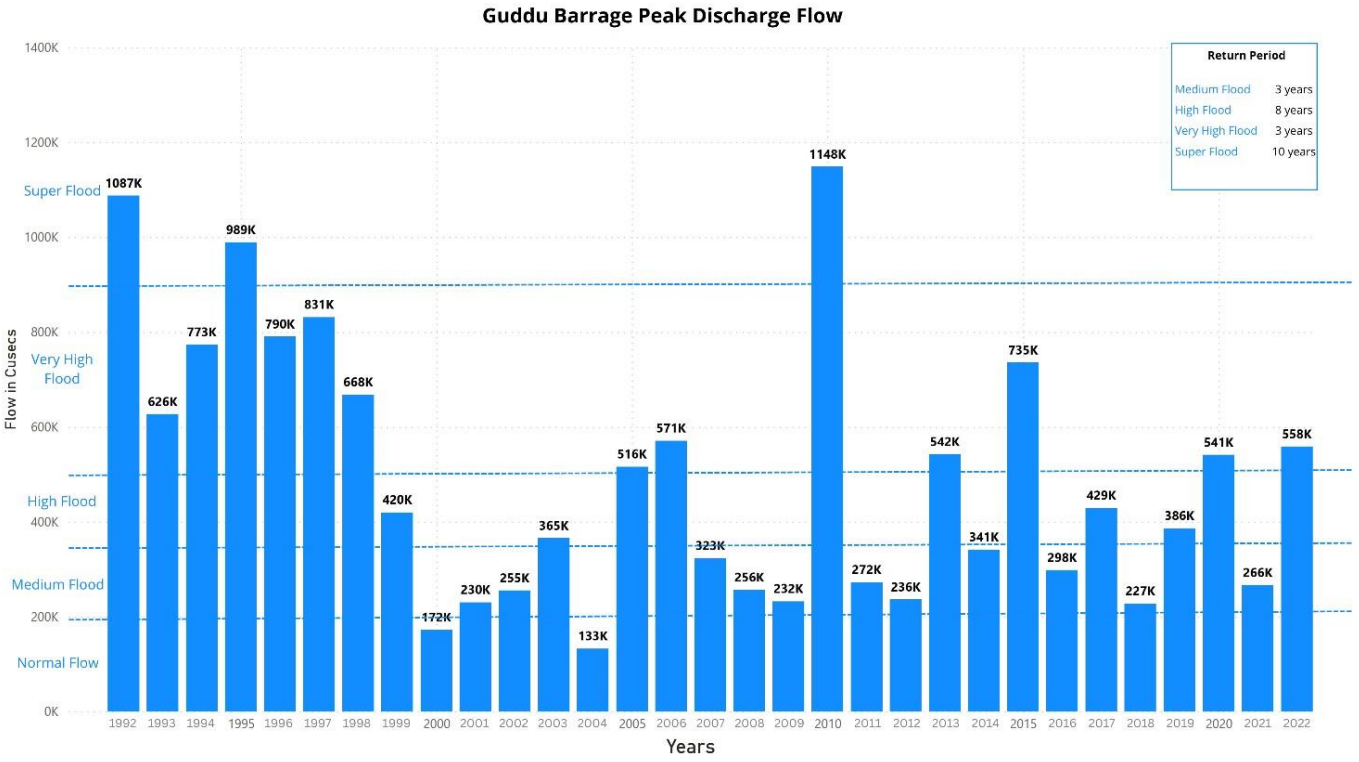


Table 1.7.1 Peak Discharge Flow of Guddu Barrage

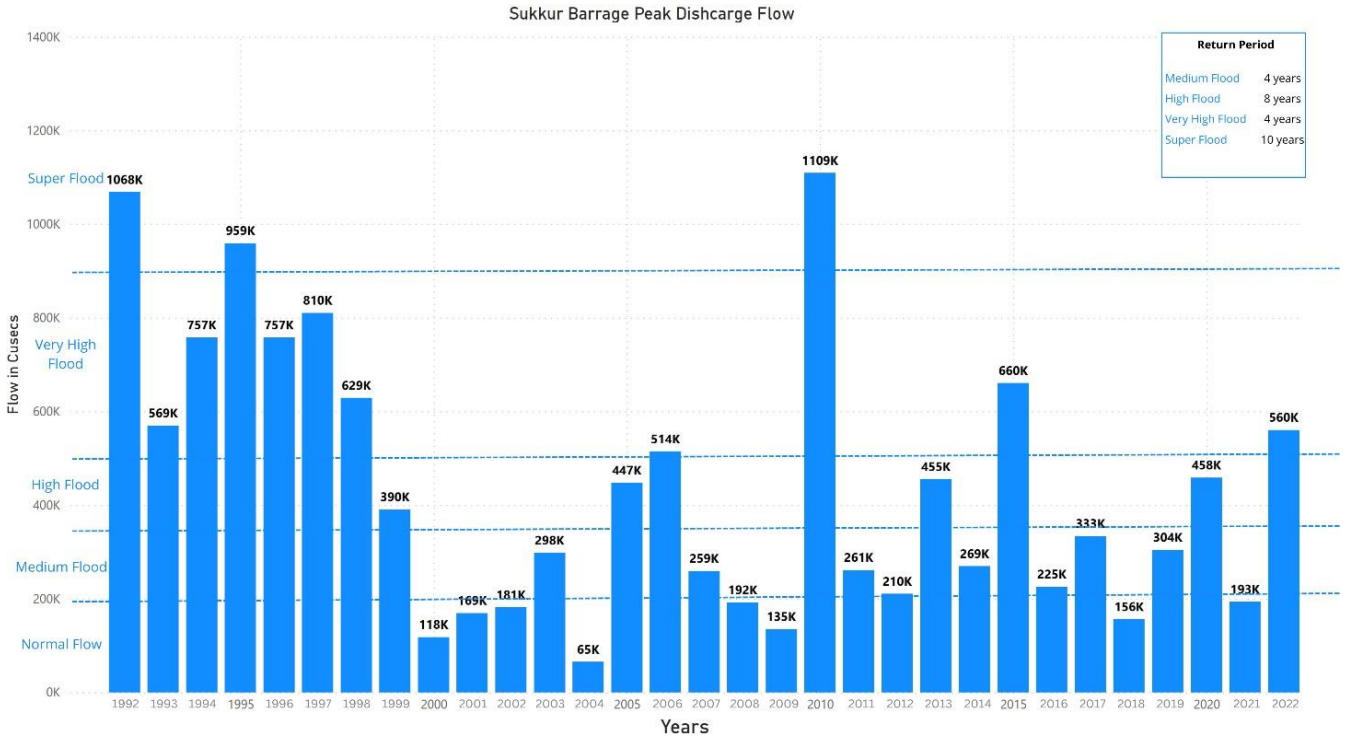


Table 1.7.2 Peak Discharge Flow of Sukkur Barrage

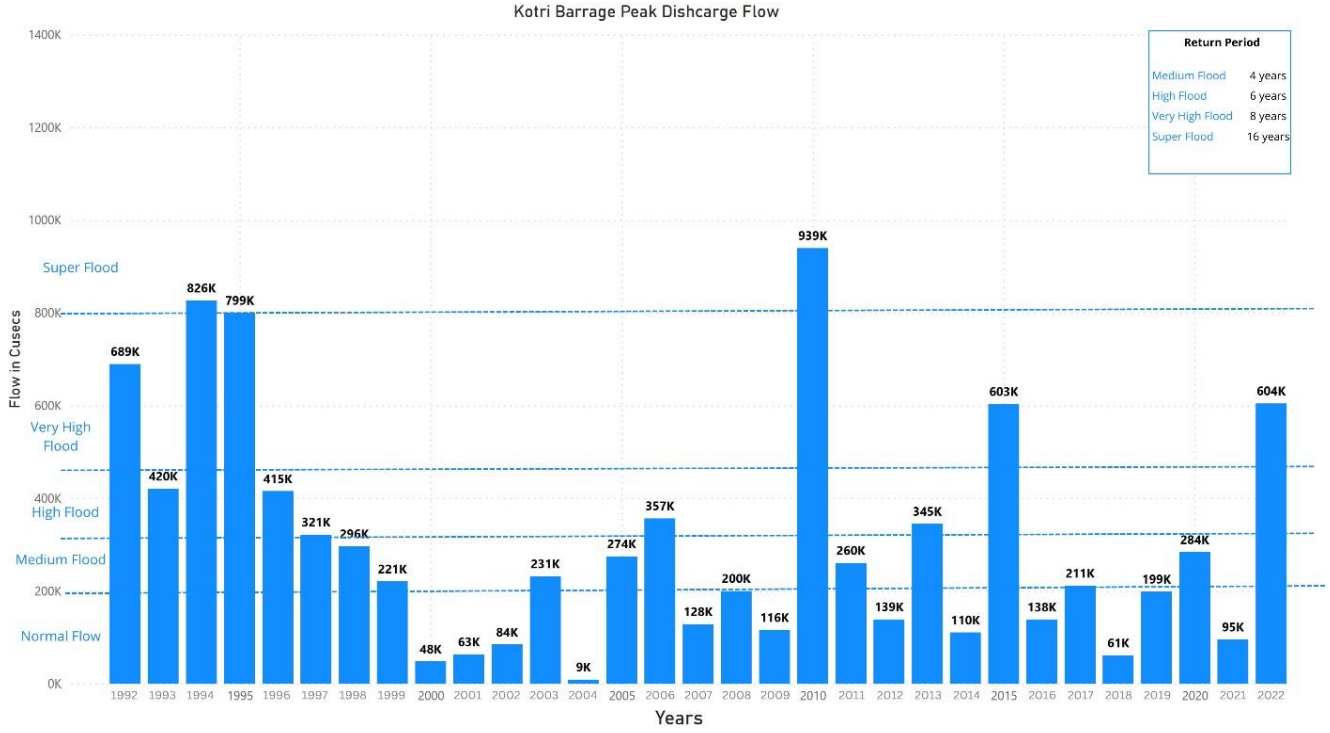


Table 1.7.3 Peak Discharge Flow of Kotri Barrage

Chapter 2: Extended / Seasonal Forecast for Monsoon 2023

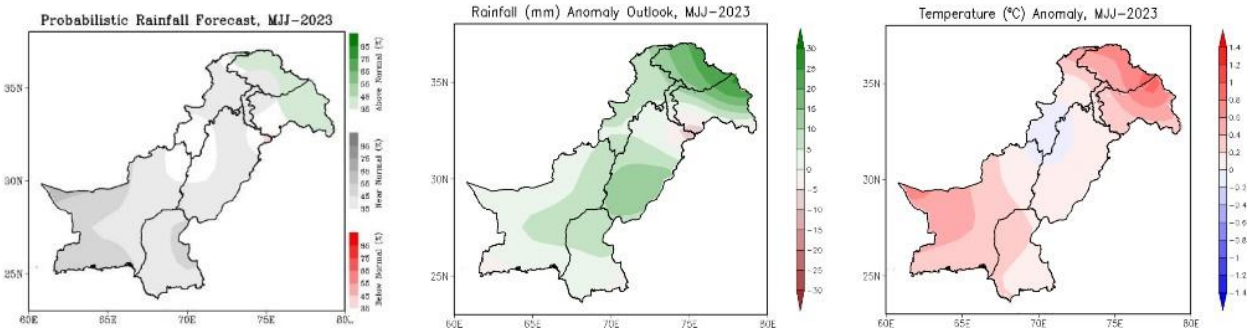
2.1 Preamble

A disaster contingency plan usually relies on forecasted or predicted or simulated event and preparedness and response measures are worked out to manage likely untoward situation. The monsoon is a weather phenomenon and advent of modern tools and techniques have enabled scientists to forecast weather with accuracies required for operational decision making.

Regarding preparation of contingency plan, seasonal forecasts published by Pakistan Meteorological Department and South Asian Climate Outlook Forum have been used to comprehend likely situation during Monsoon 2023. In addition, some other globally reputed weather forecast models have been consulted to reassure and assert likely situation. It is highly important to mention that seasonal forecasts are based on climate models and can vary over time, due to various sudden and emerging factors affecting the weather circulations.

2.2 MJJ - 2023 Forecast by Pakistan Meteorological Department

Extract of forecast for May-June-July 2023 is reproduced here, and complete forecast is given in Appendix-I.



Seasonal Outlook:

The above mentioned climatic conditions suggest that most parts of the country are likely to receive normal* rainfall, with northern areas possibly receiving slightly more than normal rainfall.

The seasonal average temperatures are expected to remain in the typical to higher-than-typical seasonal range across most of the country. However, towards the end of the season, there is a possibility of an increase in temperature in Upper Khyber Pakhtunkhwa, Gilgit-Baltistan, Kashmir and Baloshistan.

Impacts:

- Rising temperatures in the Upper Khyber Pakhtunkhwa, Gilgit-Baltistan, and Kashmir may lead to a higher rate of snowmelt, which in turn will increase the amount of water flowing into rivers.
- Farmers are advised to stay vigilant and plan water conservation for upcoming Kharif season cultivation.
- Based on current climatic conditions the expected rainfall during the upcoming monsoon season in Pakistan is likely to be normal*.

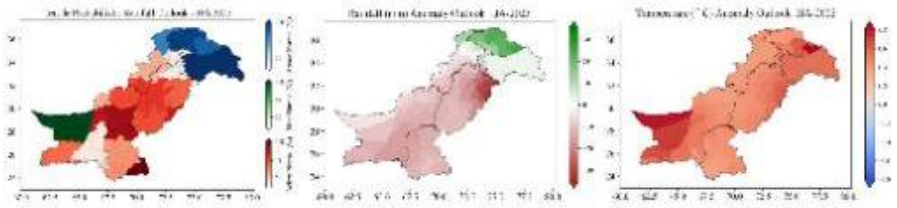
2.3 JJA - 2023 Forecast by Pakistan Meteorological Department

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

Tel:051-9250364
Fax:051-9250368

Date: 30th May 2023

Outlook for June-July-August (JJA), 2023



Synoptic situation:

During JJA 2023, moderate El Nino conditions are anticipated, with a consistently positive IOD. Considering these global and regional circulation patterns, the outlook for Pakistan during the season is as follows:

Seasonal Outlook:

The climatic conditions indicate **below normal*** rainfall for most parts of the country. Some areas in Northern Pakistan may receive slightly above normal rainfall, while western parts of Baluchistan, including the coastal belt, may experience near normal rainfall during the forecast season.

Seasonal average temperatures will mostly fall within the typical to higher-than-typical range. However, towards the season's end, Upper Khyber Pakhtunkhwa, Gilgit-Baltistan, Kashmir, and Baluchistan could see a temperature increase.

Impacts:

- Soaring temperatures in Upper Khyber Pakhtunkhwa, Gilgit-Baltistan, and Kashmir may accelerate snowmelt, increasing river flow.
- The upcoming season is expected to dominate with low rainfall and increasing temperature resulting in a gradual reduction in soil moisture in agricultural plains.
- Additional irrigation will be needed for Kharif crops and vegetables, particularly in the southern half of the country.

Note: Keeping in view of the rapid changes in climate system dynamics, the outlook is updated during the last week of each month.

*Normal = 30-years average climatic conditions.

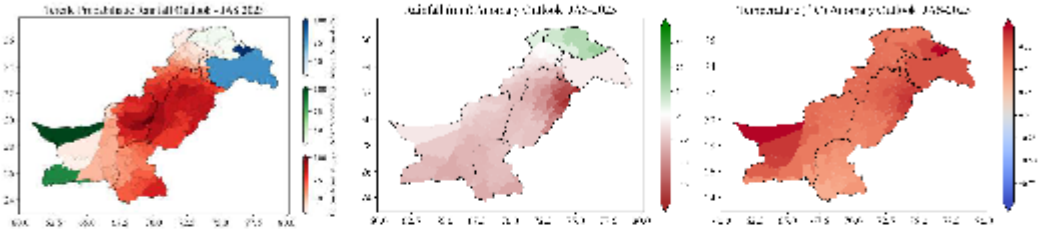
2.4 JAS - 2023 Forecast by Pakistan Meteorological Department

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

Tel:051-9250364
Fax:051-9250368

Date: 6th June 2023

Outlook for Monsoon (JAS, 2023)



Synoptic situation:

During the upcoming monsoon season (July-August-September, JAS-2023), it is anticipated that El Niño conditions will prevail, while the Indian Ocean Dipole (IOD) will remain in positive phase. Taking into account these global and regional circulation patterns, the outlook for Pakistan is as follows:

Seasonal Outlook:

The given climate conditions suggest that most areas may have normal to slightly below-normal rainfall. Northern regions may experience slightly above-normal rainfall, while western parts of Balochistan can expect near-normal rainfall.

Seasonal temperatures are expected to remain within normal* to higher than normal* ranges across the country.

Impacts:

- Possibility of occasional extreme hydro-meteorological events over catchment areas cannot be ruled out, that may generate riverine floods in the major rivers.
- Likelihood of urban flooding, hill torrents, and flash floods may also exist due to isolated heavy downpours.
- Soaring temperatures in Upper Khyber Pakhtunkhwa, Gilgit-Baltistan, and Kashmir could accelerate snowmelt, resulting in an increased flow of water into rivers.
- Farmers are advised to stay vigilant and plan water conservation for upcoming Kharif season cultivation.

Note: The current outlook is based on the May atmospheric conditions.
In case of significant changes in atmospheric conditions, an update of monsoon outlook will be issued by the end of the June.

$Normal = 30 - years\ average\ climatic\ conditions.$

2.5 June - September 2023 Forecast by South Asian Climate Outlook Forum

SASCOF is consortium of meteorologists and hydrological experts from South Asian countries, including Afghanistan, Pakistan, India, Nepal, Bangladesh, Sri Lanka, Bhutan, and Myanmar. The forum is technically supported by World Meteorological

Organization (WMO) and other meteorological departments of various countries including UK and Japan.

Extract of forecast is reproduced below;

According to Long Range Forecast (LRF) of SASCOF

- The multi-year La Niña has ended around March 2023
- Currently ENSO neutral conditions over the tropical Pacific Ocean
- El Niño conditions are likely to develop during the southwest monsoon season

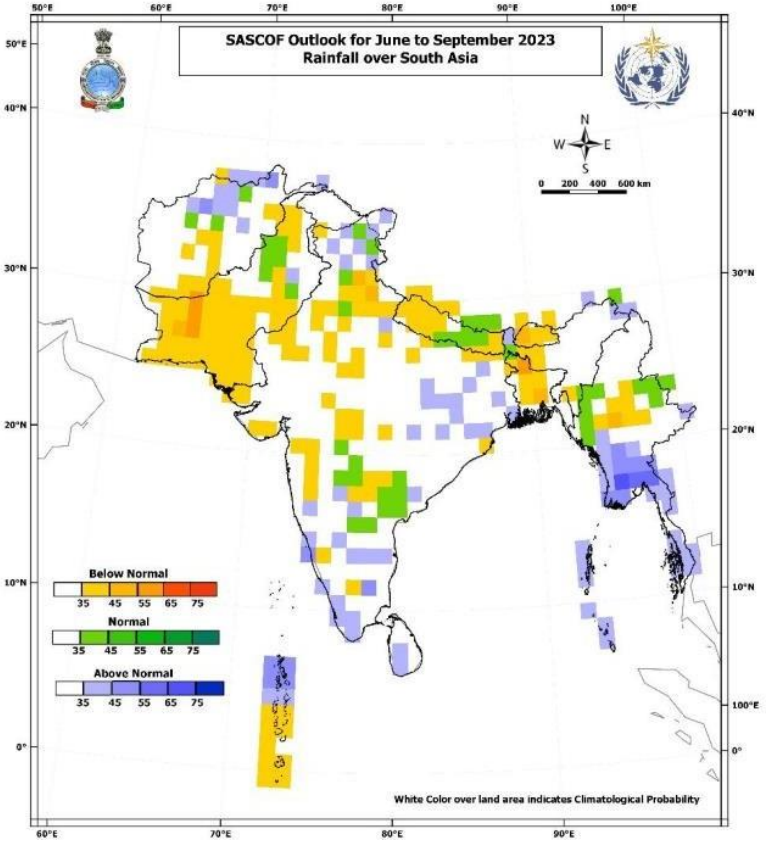


Figure 2.5 SASCOF Outlook

2.6 Conclusions drawn through the Forecasts

Based on long range / seasonal forecasts following is concluded with respect to Sindh Province;

- **El Niño** is likely to prevail during monsoon and below normal rains / dry year is expected during Monsoon 2023. Temperatures are expected to rise, and heatwaves are expected during June, July, and August.
- Raised temperatures are likely to melt snow and glaciers in upper Indus Basin and expected normal rains in upper parts of the country can generate runoff

in Indus which can cause **Medium** to **High** (350, 000 – 500,000 cusecs) flood in part of Indus flowing in Sindh during July – September.

- Due to high temperatures, more water consumption for agriculture and domestic purposes is expected during the season.

- More evaporation / evapotranspiration is expected during the season resulting in depletion of surface water resources.

2.7 Monsoon Onset

Monsoon is predominantly weather pattern developed in Arabian Sea and Indian Ocean by reversal of trade winds which produce favorable weather conditions for rains. Inland interaction of low and high pressures cause moisture to travel over vast lands of South Asia and conduction forms the clouds resulting in rains. The figure-2.7 shows advancement of southwest monsoon 2023 modeled by Indian Meteorological Department. Monsoon effects are anticipated to enter lower southern Sindh (parts of Badin, Nagarparkar, Mithi adjoins) on 30 June 2023. It will

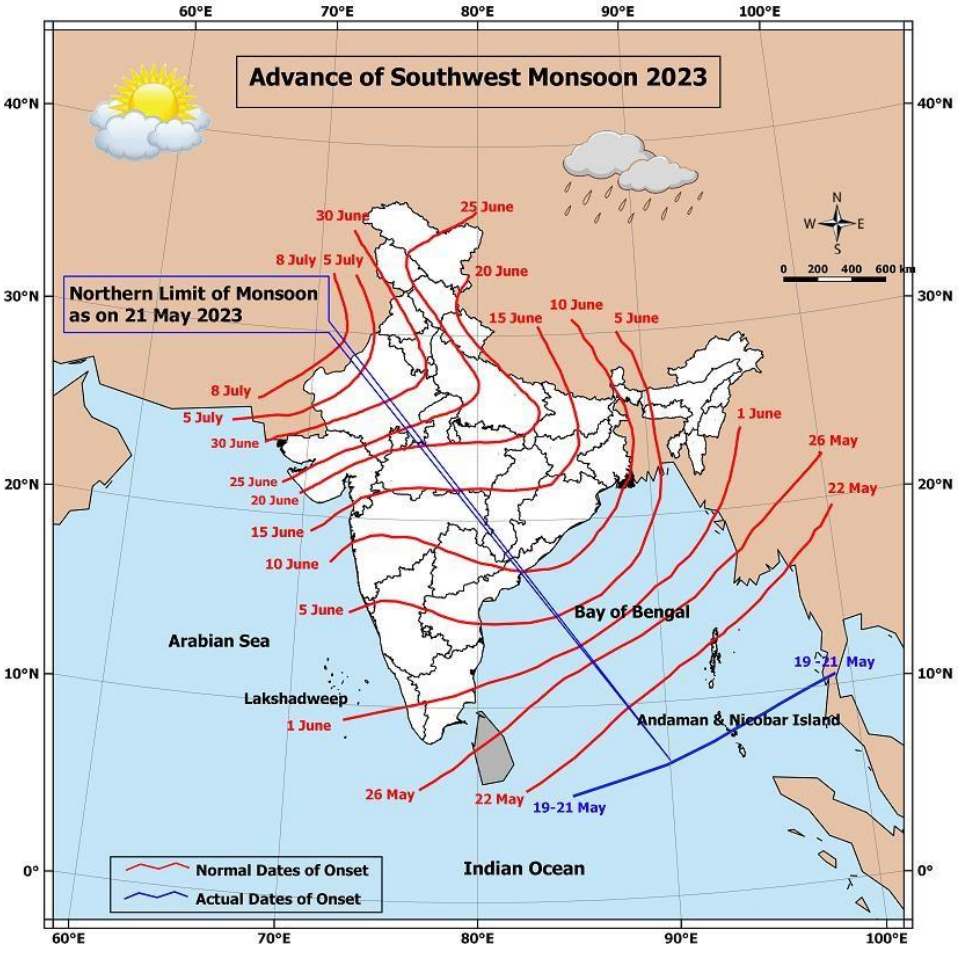


Figure 2.7 Advancement of Southwest Monsoon 2023

extend to middle Sindh (Hyderabad, Jamshoro, Mirpurkhas, Tando Allahyar, Sanghar adjoins) including Karachi on 5 July 2023. Till 8 July 2023, monsoon is likely to reach over upper Sindh (Sehwan, Shaheed Benazirabad, Naushahro Feroze, Khairpur adjoins). Monsoon is not likely to advance further westward during 2023. On the basis of extended forecasts and advancement of monsoon, it can be concluded that, southern and eastern lands of Sindh are likely to receive below normal rains during monsoon 2023, and western lands are likely to remain dry.

Cautions: Extended / long-range weather forecasts are based on climate modeling and prevailing weather conditions. Climate change impacts have changed the weather patterns; therefore, it is necessary to monitor short-range weather forecasts on regular basis and prepare accordingly to avoid untoward situations.

Chapter 3: Likely Scenarios and Effects

3.1 Preamble

Contingency plans are prepared in purview of any abnormal situation which has the potential to disturb the normal flow of life or any business. Contingency plan is in fact 'Plan B' prepared to manage the situation and bring life back to normal in the shortest possible time. To ascertain likely situations in disaster management, forecasts for forecastable hazards form the backbone of contingency plan. Provincial Monsoon Contingency Plan 2023 is based on extended forecasts discussed in Chapter 2. Following scenarios have been considered while determining likely effects and according precautionary and preparedness measures.

a) Sindh province is likely to receive below normal rainfall, therefore, less possibility of urban flooding.

b) Floods in Indus River are combined outcome of snow - glacier melt and rains in upper Indus basin. During Monsoon 2023, upper Indus basin is likely to receive less rains, hence, snow - glacial melt alone is likely to generate less runoff, therefore, accumulated flows in Indus at barrages of Sindh can receive Medium – High (350, 000 – 500,000 cusecs) flood.

c) As Medium - High (350, 000 – 500,000 cusecs) flood is expected in River Indus in Sindh, therefore, caseload and effects has been calculated based on **No Breaching Scenario** in flood protective embankments.

For determination of effects, various datasets used in Disaster Information System (DMIS) developed by PDMA Sindh and scenario – based maps developed through National Flood Protection Plan-IV have been integrated to obtain elements at risk within flood plain. Caseload for rescue, relief and recovery is based on Medium-High (350, 000 – 500,000 cusecs) scenario within flood plain.

3.2 Possible Effects on Human Population and Critical Elements

Three riverine flood scenarios i.e., medium, high-very high, and super flood were generated and estimated extents of flood inundation were overlaid on GIS layers available in DMIS. Spatial analysis on layers was performed to ascertain barrage to barrage scenario. It is to be noted that estimated inundation extent generated by Medium – High-Very High flood is used to drive required information to anticipate / predict situation during monsoon 2023. Summary of human population, critical infrastructure, and landuse likely to be affected is presented in successive tables;

a) Guddu to Sukkur Barrage

a.1. District Ghotki

Scenario: Medium Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Ghotki	Bagodeho No 29	58,527	8,280	13	9,729	-	1	-
	Ghotki	64,888	-	-	23	-	-	-
	Hussain Beli No 25	28,279	498	2	2,279	-	-	-
	Kadirpur No 25	51,428	2,596	5	4,454	1	-	-
	Ruk No 30	28,383	-	-	-	-	-	-
Ubaro	Langho No 02	28,205	-	-	-	-	-	-
	Ranwati No 04	47,236	-	-	3,930	-	-	-
	Wasti Jiwan Shah No 03	58,719	-	-	-	-	-	-
Total		**365,665**	**11,374**	**20**	**20,415**	**1**	**1**	

Table 3.2.a.1.1 Medium Flood scenario of district Ghotki

Scenario: High-Very High Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Ghotki	Bagodeho No 29	58,527	19,047	29	23,954	-	5	-
	Ghotki	64,888	-	-	88	-	-	-

	Hussain Beli No 25	28,279	2,490	4	3,374	-	-	-
	Kadirpur No 25	51,428	4,187	9	5,616	1	-	-
	Ruk No 30	28,383	89	1	1,558	-	-	-
Ubaro	Langho No 02	28,205	2,392	9	2,232	-	1	-
	Ranwati No 04	47,236	2,863	5	12,618	-	-	-
	Wasti Jiwan Shah No 03	58,719	360	1	4,793	-	-	-
Total		**365,665**	**31,428**	**58**	**54,233**	**1**	**6**	-

Table 3.2.a.1.2 High- Very High Flood scenario of district Ghotki

a.2. District Kashmore

Scenario: Medium Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Kandhkot	Dari (Ghouspur)	95,561	3,669	5	14,468	-	-	-
	Haibat	45,535	2,841	3	7,926	-	-	-
Kashmore	Gihlapur	20,899	-	-	3,132	-	-	-
	Gublo	72,920	5,884	10	11,387	-	-	-
	Kashmore Colony-I	184,417	2,263	3	7,231	2	2	-
	Kashmore-II	26,437	1,356	3	167	-	-	-
	Khewali	38,188	398	3	6,940	1	-	-
Total		**483,957**	**16,411**	**27**	**51,251**	**3**	**2**	-

Table 3.2.a.2.1 Medium Flood scenario of district Kashmore

Scenario: High-Very High Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Kandhkot	Dari (Ghouspur)	95,561	9,210	9	22,763	-	-	-
	Haibat	45,535	9,442	10	14,188	-	1	-
Kashmore	Gihlapur	20,899	2,839	2	6,972	-	-	-
	Gublo	72,920	17,782	18	17,119	-	-	-
	Kashmore Colony-I	184,417	11,044	11	12,044	3	8	-
	Kashmore-II	26,437	6,038	16	8,070	-	2	-
	Khewali	38,188	12,270	38	22,189	1	15	-

Total	**483,957**	**68,625**	**104**	**103,345**	**4**	**26**	-

Table 3.2.a.2.2 High- Very High Flood scenario of district Kashmore

a.3. District Shikarpur

Scenario: Medium Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Khanpur	Garhi Tegho	20,024	617	2	2,580	-	-	-
	Mehmooda Bagh	34,223	6,523	8	11,411	1	-	-
	Pir Bux Shujrah	35,701	-	-	-	-	-	-
Lakhi	Shewani	41,971	-	-	5,23	-	-	-
Garhi Yasin	Mirzapur	23,767	1,795	3	15,645	-	1	-
Total		**155,686**	**8,935**	**13**	**29,636**	**1**	**1**	-

Table 3.2.a.3.1 Medium Flood scenario of district Shikarpur

Scenario: High-Very High Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Khanpur	Garhi Tegho	20,024	2,365	7	6,980	-	2	-
	Mehmooda Bagh	34,223	13,898	20	24,782	1	5	-
	Pir Bux Shujrah	35,701	-	-	313	-	-	-
Lakhi	Shewani	41,971	-	-	8,296	-	4	-
Garhi Yasin	Mirzapur	23,767	2,675	4	21,606	-	2	-
Total		**155,686**	**18,938**	**31**	**61,977**	**1**	**13**	-

Table 3.2.a.3.2 High- Very High Flood of district Shikarpur

a.4. District Sukkur

Scenario: Medium Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
New Sukkur	Tamachani	379,296	311	3	13,061	-	-	-
Pano Aqil	Baiji	22,292	-	-	391	-	-	-

	Hingoro	19,653	179	1	1,461	1	-	-
	Nauraja	19,851	9,191	24	25,265	-	1	-
	Sadhuja	74,256	915	8	10,803	1	5	-
	Sangi	22,325	649	4	1,297	1	-	-
Rohri	Ali Wahan	6,292	501	1	2,916	-	-	-
	Panhwar	56,691	-	-	1,809	-	-	-
	Arore	269,392	-	-	45	-	-	-
	Loung Bhatti	208,654	-	-	4,773	2	-	-
Total		**1,078,702**	**11,746**	**41**	**61,821**	**5**	**6**	-

Table 3.2.a.4.1 Medium Flood scenario of district Sukkur

Scenario: High-Very High Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
New Sukkur	Tamachani	379,296	4851	11	27,589	-	5	-
Pano Aqil	Baiji	22,292	-	-	4,512	2	0	-
	Hingoro	19,653	1990	7	5,648	4	1	-
	Nauraja	19,851	9725	30	30,083	2	3	-
	Sadhuja	74,256	8420	27	32,567	5	15	-
	Sangi	22,325	649	6	2,247	1	-	-
Rohri	Ali Wahan	6,292	617	2	2,939	-	-	-
	Panhwar	56,691	2073	5	5,528	1	1	-
	Arore	269,392	-	-	66	-	-	-
	Loung Bhatti	208,654	-	-	10,191	4	-	-
Total		**1,078,702**	**28,325**	**88**	**121,370**	**19**	**25**	-

Table 3.2.a.4.2 High- Very High Flood scenario of district Sukkur

b) Sukkur to Kotri Barrage

b.1. District Dadu

Scenario: Medium Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Dadu	Allahabad	37,489	-	-	-	-	-	-
	Monder	76,093	-	-	8,664	-	2	-

	Pat	58,942	-	-	9,148	-	-	-
	Phulji Station	56,592	-	-	9,542	-	-	-
	Sial	160,783	1,731	1	10,734	1	1	-
Mehar	Bali Shah	68,720	-	-	740	-	-	-
	Nao Goth	130,604	-	-	13,660	-	-	-
Total		**589,223**	**1,731**	**1**	**52,488**	**1**	**3**	-

Table 3.2.b.1.1 Medium Flood scenario of district Dadu

Scenario: High-Very High Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Dadu	Allahabad	37,489	2,031	1	6,394	1	2	-
	Monder	76,093	12,581	6	13,825	1	11	-
	Pat	58,942	-	-	16,810	3	1	-
	Phulji Station	56,592	10,943	8	18,097	3	21	-
	Sial	160,783	12,459	18	34,710	7	18	-
Mehar	Bali Shah	68,720	-	-	10,338	3	4	-
	Nao Goth	130,604	11,990	19	36,184	1	5	-
Total		**589,223**	**50,004**	**52**	**136,358**	**19**	**62**	-

Table 3.2.b.1.2 High- Very High Flood scenario of district Dadu

b.2. District Hyderabad

Scenario: Medium Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Hyderabad	Hatri	547,525	-	-	1,402	1	-	-
Latifabad	Latifabad 1	348,000	360	1	146	1	-	-
	Latifabad -25	191,963	-	-	387	-	-	-
	Latifabad 4	30,931	-	-	299	-	-	-
Total		**1,118,419**	**360**	**1**	**2,234**	**2**	-	-

Table 3.2.b.2.1 Medium Flood scenario of district Hyderabad

Scenario: High-Very High Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Hyderabad	Hatri	547,525	-	-	2,837	1	-	-
Latifabad	Latifabad 1	348,000	360	1	284	2	-	-
	Latifabad -25	191,963	4,088	8	2,077	1	2	-
	Latifabad 4	30,931	-	-	443	-	-	-
Total		**1,118,419**	**4,448**	**9**	**5,641**	**4**	**2**	-

Table 3.2.b.2.2 High- Very High Flood scenario of district Hyderabad

b.3. District Jamshoro

Scenario: Medium Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Manjand	Amri	28,375	242	1	7,213	1	-	-
	Lakha	30,342	-	-	1,164	-	-	-
	Manjhand	55,791	-	-	3,086	-	1	-
	Unerpur	13,586	-	-	7,445	-	-	-
Sehwan	Unknown	2,480	2,480	2	3,125	-	1	-
	Talti	37,792	2,212	4	17,194	-	3	-
Kotri	Unknown	51,042	-	-	127	-	-	-
Total		**219,408**	**4,934**	**7**	**39,354**	**1**	**5**	-

Table 3.2.b.3.1 Medium Flood scenario of district Jamshoro

Scenario: High-Very High Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Manjand	Amri	28,375	5,242	12	21,104	1	12	-
	Lakha	30,342	-	-	10,344	-	-	-
	Manjhand	55,791	-	-	14,754	-	4	-
	Unerpur	13,586	-	-	14,376	-	-	-
Sehwan	Unknown	2,480	2,480	2	4,043	-	1	-
	Talti	37,792	15,007	11	27,017	-	12	-
Kotri	Unknown	51,042	-	-	874	-	1	-
Total		**219,408**	**22,729**	**25**	**92,512**	**1**	**30**	-

Table 3.2.b.3.2 High- Very High Flood scenario of district Jamshoro

b.4. District Khairpur

Scenario: Medium Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Gambat	Agra	52,958	3,212	4	16785	-	6	-
	Khemta	18,208	1,148	4	5509	-	2	-
	Ripri	34,619	2,178	1	8603	-	1	-
Khairpur	Baberloi	29,490	1,331	1	340	-	1	-
Kingri	Hadal Shah	130,883	7,887	12	30633	-	8	-
	Kot Mir Mohammad	95,206	-	-	41	-	-	-
	Piryaloi	15,393	-		5	-	-	-
Sobho Dero	Pir Hayat Shah	35,249	2,147	1	3938	-	12	-
	Sagyoon	24,950	2,745	3	23916	1	15	-
Total		**436,956**	**20,648**	**26**	**89,770**	**1**	**45**	-

Table 3.2.b.4.1 Medium Flood scenario of district Khairpur

Scenario: High-Very High Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Gambat	Agra	52,958	20,720	27	33,860	2	25	-
	Khemta	18,208	5,909	7	12,971	-	6	-
	Ripri	34,619	22,144	33	25,836	-	14	-
Khairpur	Baberloi	29,490	1,331	1	954	-	1	-
Kingri	Hadal Shah	130,883	12,913	18	42,658	1	12	-
	Kot Mir Mohammad	95,206	433	3	2,181	1	2	-
	Piryaloi	15,393	195	1	2,194	-	1	-
Sobho Dero	Pir Hayat Shah	35,249	5,580	6	10,563	2	16	-
	Sagyoon	24,950	5,101	10	32,628	1	19	-
Total		**436,956**	**74,326**	**106**	**163,845**	**7**	**96**	-

Table 3.2.b.4.2 High- Very High Flood scenario of district Khairpur

b.5. District Larkana

Scenario: Medium Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Bakrani Taluks	Purano Abad	66,113	4,278	3	10,368	1	1	-
Dokri	Bagi	57,789	1,252	2	8,979	-	-	-
	Karani	26,392	-	-	4,952	-	1	-
Larkana	Akil	38,689	2,677	2	4,042	-	-	-
Ratodero	Bahman	38,073	-	-	2,299	-	-	-
Total		**227,056**	**8,207**	**7**	**30,640**	**1**	**2**	-

Table 3.2.b.5.1 Medium Flood scenario of district Larkana

Scenario: High-Very High Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Bakrani Taluks	Purano Abad	66,113	9,523	7	22,743	1	2	-
Dokri	Bagi	57,789	2,350	5	14,107	-	3	-
	Karani	26,392	4,256	8	15,013	-	8	-
Larkana	Akil	38,689	2,677	2	4,627	-	-	-
Ratodero	Bahman	38,073	2,571	1	5,561	-	1	-
Total		**227,056**	**21,377**	**23**	**62,051**	**1**	**14**	-

Table 3.2.b.5.2 High- Very High Flood scenario of district Larkana

b.6. District Matiari

Scenario: Medium Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Hala	Bhanoth	25,857	1,069	1	5,758	-	-	-
	Hala Old	19,448	-	-	4,370	-	-	-

	Karam khan Nizamani	104,714	-	-	-	-	-	-
Saeedabad	Saeedabad	45,126	-	-		-	-	-
Total		**195,145**	**1,069**	**1**	**10,128**	-	-	-

Table 3.2.b.6.1 Medium Flood scenario of district Matiari

Scenario: High-Very High Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Hala	Bhanoth	25,857	1,819	2	26,475	-	1	-
	Hala Old	19,448	1,524	3	30,294	-	-	-
	Karam khan Nizamani	104,714	557	1	206	-	-	-
Saeedabad	Saeedabad	45,126	942	1	9,082	-	-	-
Total		**195,145**	**4,842**	**7**	**66,057**	-	**1**	-

Table 3.2.b.6.2 High- Very High Flood scenario of district Matiari

b.7. District Naushahro Feroze

Scenario: Medium Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Kandiaro	Abad	18,796	2,585	3	6,675	-	-	-
	Bhorti	16,273	-	-	5,700	-	-	-
	Dabhro	16,266	-	-	5,191	-	-	-
	Ghulam Shah	33,820	-	-	42	-	-	-
	Kamaldero	25,349	1,846	8	13,029	-	-	-
	Mohabat Dero Jagir	21,427	-	-	6,428	-	-	-
Moro	Depareja	35,639	-	-	4,337	-	1	-
	Fatoo Balal	116,151	720	1	3,576	-	-	-
	Gachero	66,500	-	-	3,393	-	-	-
	Lalia	24,428	639	2	1,089	-	-	-
Total		**374,649**	**5,790**	**14**	**49,460**	-	**1**	-

Table 3.2.b.7.1 Medium Flood scenario of district Naushahro Feroze

Scenario: High-Very High Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Kandiaro	Abad	18,796	8,619	11	12,054	-	-	-
	Bhorti	16,273	1,938	4	6,751	-	-	-
	Dabhro	16,266	2,323	2	6,715	-	-	-
	Ghulam Shah	33,820	-	-	146	-	-	-
	Kamaldero	25,349	7,872	21	18,334	1	-	-
	Mohabat Dero Jagir	21,427	1,132	6	9,411	-	-	-
Moro	Depareja	35,639	4,479	1	7,034	-	1	-
	Fatoo Balal	116,151	5,359	5	13,525	-	1	-
	Gachero	66,500	6,643	10	13,513	-	-	-
	Lalia	24,428	1,627	4	3,761	-	-	-
Total		**374,649**	**39,992**	**64**	**91,244**	**1**	**2**	-

Table 3.2.b.7.2 High- Very High Flood scenario of district Naushahro Feroze

b.8. District Shaheed Benazirabad

Scenario: Medium Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Kazi Ahmed	Qazi Ahmed 02	18,796	-	-	-	-	-	-
	Said Kando	16,273	-	-	2,938	-	-	-
	Shahpur Jahania	16,266	-	-	7,132	-	-	-
	That	33,820	-	-	2,499	-	-	-
Sakrand	Bhura	35,639	-	-	2,183	-	-	-
	Guhram Mari	16,151	-	-	2,957	-	-	-
	Hamal Faqir	66,500	-	-	-	-	-	-
Total		**242,965**	**-**	**-**	**17,709**	-	-	-

Table 3.2.b.8.1 Medium Flood scenario of district Shaheed Benazirabad

Scenario: High-Very High Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
	Qazi Ahmed 02	18,796	1,420	1	2,647	-	1	-

Kazi Ahmed	Said Kando	16,273	3,455	5	13,359	-	4	-
	Shahpur Jahania	16,266	7,200	6	18,053	-	7	-
	That	33,820	14,060	8	9,114	-	7	-
Sakrand	Bhura	35,639	-	-	6,785	-	-	-
	Guhram Mari	16,151	-	-	10,319	-	-	-
	Hamal Faqir	66,500	-	-	12,417	-	-	-
Total		**242,965**	**26,135**	**20**	**72,694**	-	**19**	-

Table 3.2.b.8.2 High- Very High Flood scenario of district Shaheed Benazirabad

c) Kotri Barrage to Indus Delta

c.1. District Sujawal

Scenario: Medium Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Jati	Mureed Khosa	24,129	-	-	129	-	-	-
Kharo Chan	Kharo Chan	10,485	-	-	18	-	-	-
Shah Bunder	Doulat Pur	16,984	-	-	775	-	-	-
	Goongani	88,530	-	-	1,348	-	-	-
	Jongo Jalbani	13,845	-	-	4	-	-	-
Sujawal	Ali Bahar	17,411	-	-	13	-	-	-
	Belo	54,228	-	-	359	1	-	-
	Bijora	24,129	1,162	1	567	-	-	-
Total		**249,741**	**1,162**	**1**	**3,213**	**1**	-	-

Table 3.2.c.1.1 Medium Flood scenario of district Sujawal

Scenario: High-Very High Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Jati	Mureed Khosa	24,129	1,820	2	3,005	-	-	-
Kharo Chan	Kharo Chan	10,485	-	-	721	-	-	-

Shah Bunder	Doulat Pur	16,984	638	2	2,807	-	-	-
	Goongani	88,530	941	1	3,956	-	-	-
	Jongo Jalbani	13,845	-	-	942	-	-	-
Sujawal	Ali Bahar	17,411	-	-	895	-	-	-
	Belo	54,228	1,162	1	2,176	1	-	-
	Bijora	24,129	1,820	1	4,488	-	-	-
Total		**249,741**	**6,381**	**7**	**18,990**	**1**	-	-

Table 3.2.c.1.2 High- Very High Flood scenario of district Sujawal

c.2. District Tando Muhammad Khan

Scenario: Medium Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Bulri Shah Karim	Janhan Soomro	30,686	-	-	-	-	-	-
	Mullan Katiar	35,772	-	-	475	1	-	-
	Saeedpur	61,167	-	-	905	-	-	-
Total		**127,625**	-	-	**1,380**	**1**	-	-

Table 3.2.c.2.1 Medium Flood scenario of district Tando Muhammad Khan

Scenario: High-Very High Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Bulri Shah Karim	Janhan Soomro	30,686	-	-	38	-	-	-
	Mullan Katiar	35,772	-	-	1,274	1	-	-
	Saeedpur	61,167	1,809	1	1,356	-	-	-
Total		**127,625**	1,809	**1**	**2,668**	**1**	-	-

Table 3.2.c.2.2 High- Very High Flood scenario of district Tando Muhammad Khan

c.3. District Thatta

Scenario: Medium Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Ghorabari	Khan	58,030	-	-	1,919	-	-	-

	Kotri Allah Rakhio Shah	39,913	-	-	1,614	-	-	-
	Udassi	28,414	709	1	730	-	-	-
Keti Bunder	Keti Bunder	52,136	-	-	146	-	-	-
Thatta	Chato Chand	15,644	-	-	3	-	-	-
	Domani	15,356	-	-	208	-	-	-
	Jhurrk	26,484	-	-	171	-	-	-
	Kalan Kot	13,303	-	-	94	1	-	-
	Tando Hafiz Shah	24,836	-	-	1,273	-	-	-
Total		**274,116**	**709**	**1**	**6,158**	**1**	-	-

Table 3.2.c.3.1 Medium Flood scenario of district Thatta

Scenario: High-Very High Flood

Taluka	UC	Total Population of UC	Population	Villages	Crop (acres)	No of Roads	Education Facilities	Health Facilities
Ghorabari	Khan	58,030	-	-	7,847	-	-	-
	Kotri Allah Rakhio Shah	39,913	-	-	7,223	-	-	-
	Udassi	28,414	5,361	7	3,959	-	-	-
Keti Bunder	Keti Bunder	52,136	2,030	1	551	-	-	-
Thatta	Chato Chand	15,644	-	-	12	-	-	-
	Domani	15,356	-	-	3,787	-	-	-
	Jhurrk	26,484	958	1	1,687	-	-	-
	Kalan Kot	13,303	-	-	799	1	-	-
	Tando Hafiz Shah	24,836	647	3	3,215	-	-	-
Total		**274,116**	**8,996**	**12**	**29,080**	**1**	-	-

Table 3.2.c.3.2 High- Very High Flood scenario of district Thatta

3.3 District-wise Estimated Population Likely to be Affected

Based on above scenarios, district-wise population and household likely to be affected is presented below;

Scenario: Medium Flood

S#	District	Population Likely to be Affected	Household Likely to be Affected
1	Dadu	1,731	289
2	Ghotki	11,374	1,896
3	Hyderabad	360	60
4	Jamshoro	4,934	822
5	Kashmore	16,411	2,735
6	Khairpur	20,648	3,441
7	Larkana	8,207	1,368
8	Matiari	1,069	178
9	Naushahro Feroze	5,790	965
10	Shikarpur	8,935	1,489
11	Sujawal	1,162	194
12	Sukkur	11,746	1,958
13	Thatta	709	118
	Total	**93,076**	**15,513**

Table 3.3.1 Medium Flood scenario district-wise estimated population likely to be affected

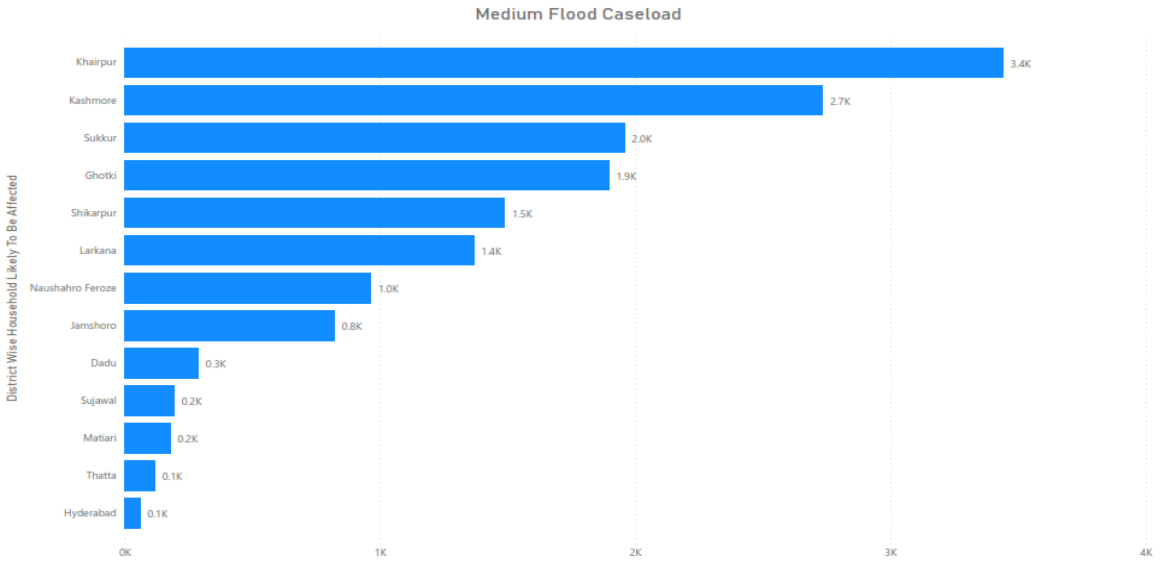


Figure 3.3.1 Medium Flood scenario district-wise estimated population likely to be affected

Scenario: High - Very High Flood

S#	District	Population Likely to be Affected	Household Likely to be Affected
1	Dadu	50,004	8,334
2	Ghotki	31,428	5,238
3	Hyderabad	4,448	741
4	Jamshoro	22,729	3,788
5	Kashmore	68,625	11,438
6	Khairpur	74,326	12,388
7	Larkana	21,377	3,563
8	Matiari	4,842	807
9	Naushahro Feroze	39,992	6,665
10	Shaheed Benazirabad	26,135	4,356
11	Shikarpur	18,938	3,156
12	Sujawal	6,381	1,063
13	Sukkur	28,325	4,721
14	Tando Muhammad Khan	1,809	301
15	Thatta	8,996	1,499
Total		**408,355**	**68,058**

Table 3.3.2 High - Very High Flood scenario district-wise estimated population likely to be affected

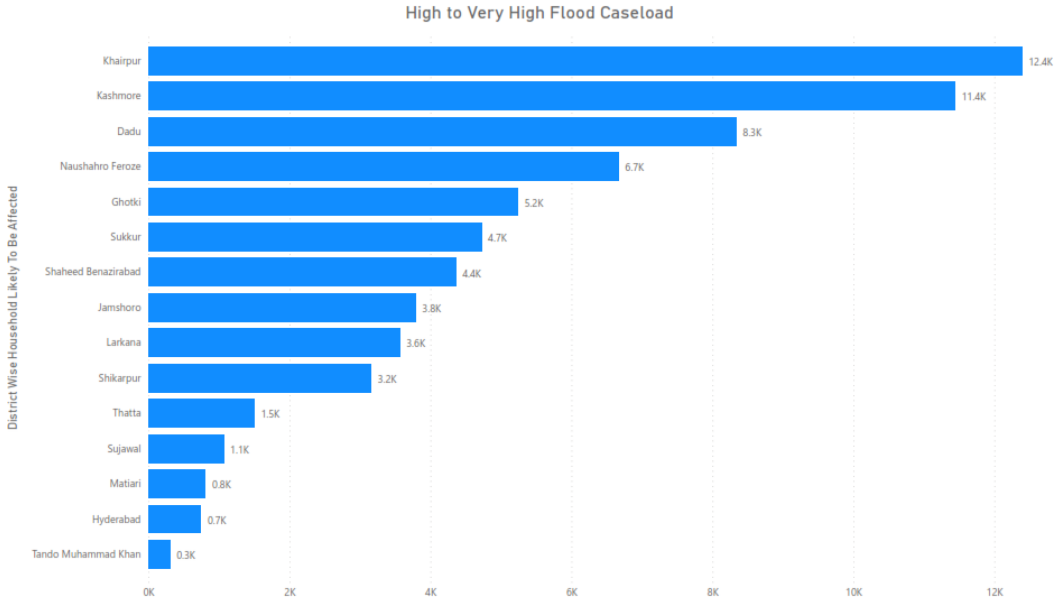


Figure 3.3.2 High - Very High Flood scenario district-wise estimated population likely to be affected

Note:

1. Estimated population has been calculated with following method;

Estimated 2023 Population = (Population and Census of 2017 x 2.41% (growth rate of Sindh province)) – 0.7% (death rate of the Province)

2. Average household has been estimated as;

Household = Estimated Population likely to be Affected / 6 (six persons per family)

3.4. Relief Caseload

The anticipated flows in Indus at barrages of Sindh is likely to be in range between 350, 000 – 500,000 cusecs which may not develop any significant human disturbance. A normal riverine flood is expected to prevail during monsoon 2023. Further, flood plains are naturally flooded each year with varying water levels depending on quantum of precipitation over respective basins.

Actual Caseload Calculation and Relief Requirements

Scenario	Population likely to be affected	Household Likely to be affected	Relief Requirements
Medium Flood (350, 000 - 500,000)	93,076	15,513	1. 21x boats with OBM 1 boat per 4500 persons 2. 15,513x family size tents to accommodate 6 (average) person's family 3. 15,513x chatai for flooring in tent

			4. 15,513x 30-liter water coolers 5. 310x relief camps for entire Province (50 families per camp i.e., household / number camps) 6. 1240 portable toilets (4 in each camp. 2x for women and children. 2x for males) 7. 310x solar powered flood lights for each camp 8. 310x water tank of 250 gallons for each camp 9. 15,513x hygiene kits (items in hygiene kit can vary according to women and girl population) 10. 46,500 mosquito nets (3 nets per household) 11. 15,513 kitchen sets (essential utensils only i.e., plates, glasses, cocking pots etc.) 12. 15,513 ration bags (with essential food items and quantity sufficient

			for one month consumption per family)

Table 3.4.1 Medium Flood actual caseload calculation and relief requirements

Caseload Relief Requirements after Inclusion of 20% Error Factor

Various datasets have been considered in ascertaining the affected population and critical infrastructure. There is always possibility of errors in data which can arise due to data averaging and generalization, changes in flood plain and river behavior, weather forecast errors and any other unprecedented condition. Hence, in view of these factors, 20% Error Factor has been added in caseload and requirements to marginalize the error impact. Recalculated caseload and relief requirements are summarized below;

S#	Actual caseload	Recalculated caseload (20% increase)	Actual Requirements	Recalculated Relief Requirements
1.	15,513	18,616	1. 21x boats 2. 15,513x Tents 3. 15,513x chatai 4. 15,513x 30-liter water coolers 5. 310x relief camps 6. 1240 portable toilets 7. 310x solar powered flood lights 8. 310x water tank of 250 gallons 9. 15,513x hygiene kits 10. 46,500 mosquito nets	1. 25x boats 2. 18,616 Tents 3. 18,616x chatai 4. 18,616x 30-literwater coolers 5. 372x relief camps 6. 1488 portable toilets 7. 372x solar powered flood 8. 372x water tank of 250 gallons 9. 18,616x hygiene kits 10. 55,800 mosquito nets 11. 18,616 kitchen sets

			11. 15,513 kitchen sets 12. 15,513 ration bags	12. 18,616 ration bags

Table 3.4.2 Medium Flood caseload relief requirements after inclusion of 20% error factor

3.5 Supply Demand Gap

Anticipated supply demand gap in relief and response is presented below

S#	Items	Required Quantity	Available Quantity	Shortfall
1	Boats (Different Categories)	25	341*	Nil
2	Tents	18,616	310,168	Nil
3	Chatai	18,616	4,275	14,341
4	Water Cooler (30 ltr)	18,616	10,369	8,247
5	Portable Toilet	1488	166	1322
6	Solar Lights	372	500	Nil
7	Water Tank (250 gallons)	372	31	341
8	Hygiene Kits	18,616	22,686	Nil
9	Mosquito Nets	55,800	1,819,902	Nil
10	Kitchen Set	18,616	7,251	11,365
11	Ration Bags	18,616	-	Shall be purchased during event

*6 PDMA + 34 DDMAs+ 281 HQ Engineer 5 Corps + 20 Pak Navy = 341

3.6 District Wise Camps Location

S#	District	Household Likely to be Affected	Relief Camps	Relief Camp Coordinates	Area in (acres)
1	Dadu	289	6	Upper right corner: 27° 9'13.05"N 67°56'4.48"E Upper left corner: 27° 9'32.00"N 67°55'4.06"E Lower right corner: 27° 6'22.15"N 67°53'50.21"E Lower left corner: 27° 6'34.90"N 67°53'30.66"E **Nearest Known Location:** Radhan City	2,340
				Upper right corner: 26°59'46.91"N 67°54'5.08"E Upper left corner: 26°59'37.28"N 67°53'37.83"E Lower right corner: 26°58'44.16"N 67°53'38.27"E Lower left corner: 26°58'40.60"N 67°53'12.92"E **Nearest Known Location:** Paat Sharif	356

				Upper right corner: 26°51'45.50"N 67°46'20.84"E Upper left corner: 26°51'55.75"N 67°45'5.56"E Lower right corner: 26°50'49.80"N 67°45'39.15"E Lower left corner: 26°50'41.51"N 67°45'13.84"E **Nearest Known Location:** Phulji Station	678
				Upper right corner: 26°47'23.09"N 67°44'36.84"E Upper left corner: 26°46'39.61"N 67°43'50.53"E Lower right corner: 26°44'49.96"N 67°44'48.18"E Lower left corner: 26°44'49.27"N 67°44'24.14"E **Nearest Known Location:** Pir Gunio	1,205
				Upper right corner: 26°36'58.28"N 67°43'58.63"E Upper left corner: 26°37'1.56"N 67°43'6.15"E Lower right corner: 26°36'11.71"N 67°43'28.78"E Lower left corner: 26°36'9.11"N 67°42'47.31"E **Nearest Known Location:** Khudabad	515
2	Ghotki	1,896	38	Upper right corner: 27°59'44.09"N 69°13'42.51"E Upper left corner: 27°59'48.00"N 69°13'34.00"E Lower right corner: 27°59'32.36"N 69°13'40.01"E Lower left corner: 27°59'33.66"N 69°13'24.69"E **Nearest Known Location:** Sardar Khan Ghoto Village	39.6
				Upper right corner: 28° 1'10.30"N 69°18'5.79"E Upper left corner:28° 1'9.64"N 69°17'55.99"E Lower right corner: 28° 0'58.95"N 69°18'3.82"E Lower left corner: 28° 1'3.82"N 69°17'53.91"E **Nearest Known Location:** Jindu Ghoto	24.3
				Upper right corner: 28° 4'36.13"N 69°26'13.91"E Upper left corner:28° 4'32.89"N 69°26'5.62"E Lower right corner: 28° 4'32.13"N 69°26'26.51"E Lower left corner: 28° 4'24.60"N 69°26'9.95"E **Nearest Known Location:** Fateh Pur	25.4
				Upper right corner: 28° 5'46.86"N 69°31'51.93"E Upper left corner:28° 5'48.30"N 69°31'26.06"E	248

				Lower right corner: 28° 5'11.96"N 69°31'55.04"E Lower left corner: 28° 4'56.92"N 69°31'34.26"E **Nearest Known Location:** Bago Daho	
				Upper right corner: 28° 9'12.32"N 69°38'16.73"E Upper left corner:28° 9'15.94"N 69°37'59.05"E Lower right corner: 28° 8'47.83"N 69°37'46.53"E Lower left corner: 28° 8'49.02"N 69°37'39.77"E **Nearest Known Location:** Dadan Khan Rajri	116
				Upper right corner: 28°13'36.41"N 69°41'26.92"E Upper left corner:28°13'34.28"N 69°41'9.41"E Lower right corner: 28°13'9.96"N 69°41'7.26"E Lower left corner: 28°13'22.65"N 69°40'54.94"E **Nearest Known Location:** Wasti Jiuan Shah	84
				Upper right corner: 28°16'6.58"N 69°47'36.71"E Upper left corner:28°16'10.28"N 69°47'33.15"E Lower right corner: 28°15'58.95"N 69°47'27.48"E Lower left corner: 28°16'0.12"N 69°47'23.68"E **Nearest Known Location:** Garkano	13
3	Hyderabad	60	1	Upper right corner: 25°29'13.09"N 68°21'54.15"E Upper left corner: 25°29'12.29"N 68°21'11.49"E Lower right corner: 25°28'45.36"N 68°21'49.39"E Lower left corner: 25°28'44.34"N 68°21'9.00"E **Nearest Known Location:** Darya Baig Mari	245
				Upper right corner: 25°27'22.67"N 68°20'30.07"E Upper left corner: 25°27'20.30"N 68°20'7.72"E Lower right corner: 25°26'53.95"N 68°20'31.73"E Lower left corner: 25°26'51.44"N 68°20'12.96"E **Nearest Known Location:** Goth Eiden Shoro	127
				Upper right corner: 25°16'32.49"N 68°22'11.77"E Upper left corner: 25°16'32.02"N 68°21'35.95"E Lower right corner: 25°16'4.62"N 68°22'12.20"E Lower left corner: 25°16'4.51"N 68°21'37.21"E	211

				Nearest Known Location: Ganju Takar Police Training Centre	
4	Jamshoro	822	16	Upper right corner: 26°31'48.68"N 67°48'3.25"E Upper left corner: 26°31'46.25"N 67°47'47.34"E Lower right corner: 26°31'35.05"N 67°48'9.35"E Lower left corner: 26°31'32.26"N 67°47'60.00"E **Nearest Known Location:** Goth Talti	44.4
				Upper right corner: 26°23'11.34"N 67°51'57.91"E Upper left corner: 26°23'6.44"N 67°51'20.59"E Lower right corner: 26°22'30.22"N 67°52'11.51"E Lower left corner: 26°22'25.70"N 67°51'28.44"E **Nearest Known Location:** Gul Muhammad Shah Village	367
				Upper right corner: 26° 5'4.44"N 68° 4'38.42"E Upper left corner: 26° 4'20.86"N 68° 3'33.59"E Lower right corner: 26° 4'13.03"N 68° 5'5.38"E Lower left corner: 26° 3'48.03"N 68° 3'57.70"E **Nearest Known Location:** Wahan Chhachhar	784
				Upper right corner: 25°35'21.49"N 68°19'48.74"E Upper left corner: 25°35'29.13"N 68°19'1.21"E Lower right corner: 25°34'58.71"N 68°19'43.34"E Lower left corner: 25°35'4.29"N 68°18'59.62"E **Nearest Known Location:** Akro Village	241
5	Kashmore	2,735	55	Upper right corner: 28°26'21.84"N 69°37'26.76"E Upper left corner: 28°26'20.73"N 69°37'8.44"E Lower right corner: 28°25'33.51"N 69°37'25.85"E Lower left corner: 28°25'26.60"N 69°36'55.55"E **Nearest Known Location:** Meerani Mohalla	328
				Upper right corner: 28°24'51.71"N 69°27'9.23"E Upper left corner:28°24'48.07"N 69°26'59.27"E Lower right corner: 28°24'13.55"N 69°27'29.00"E Lower left corner: 28°24'10.11"N 69°27'5.79"E **Nearest Known Location:** Naich Village	169

				Upper right corner: 28°20'38.69"N 69°23'46.65"E Upper left corner:28°20'36.68"N 69°22'54.63"E Lower right corner: 28°19'31.83"N 69°23'1.51"E Lower left corner: 28°19'31.94"N 69°22'45.83"E **Nearest Known Location:** Jam Mehoon Chachar	458
				Upper right corner: 28°16'58.00"N 69°16'16.43"E Upper left corner:28°16'49.39"N 69°15'59.94"E Lower right corner: 28°16'47.39"N 69°16'43.72"E Lower left corner: 28°16'38.04"N 69°16'5.77"E **Nearest Known Location:** Kamal Khan Bangwar	94.4
				Upper right corner: 28°15'53.80"N 69°12'41.77"E Upper left corner:28°15'41.15"N 69°12'2.80"E Lower right corner: 28°15'33.06"N 69°12'46.16"E Lower left corner: 28°15'22.11"N 69°12'8.50"E **Nearest Known Location:** Syed Sardar Ali Shah Shrine	72.7
6	Khairpur	3,441	69	Upper right corner: 27°35'9.56"N 68°34'39.54"E Upper left corner: 27°34'58.92"N 68°34'19.03"E Lower right corner: 27°34'58.28"N 68°34'46.60"E Lower left corner: 27°34'43.84"N 68°34'19.47"E **Nearest Known Location:** Mitho Dero Village	76
				Upper right corner: 27°31'12.85"N 68°32'46.32"E Upper left corner:27°31'2.08"N 68°32'35.17"E Lower right corner: 27°31'4.69"N 68°32'53.65"E Lower left corner: 27°30'55.24"N 68°32'42.96"E **Nearest Known Location:** Goth Misri Faqeer	33.4
				Upper right corner: 27°23'42.96"N 68°24'59.58"E Upper left corner:27°23'36.48"N 68°24'47.80"E Lower right corner: 27°23'26.91"N 68°25'6.56"E Lower left corner: 27°23'21.16"N 68°24'52.51"E **Nearest Known Location:** Belharo Village	50
				Upper right corner: 27°19'42.15"N 68°21'59.67"E Upper left corner:27°19'39.84"N 68°21'52.69"E	15.9

				Lower right corner: 27°19'32.04"N 68°22'12.45"E Lower left corner: 27°19'30.70"N 68°22'10.39"E **Nearest Known Location:** Pir Hayat Shah Jilani Village	
				Upper right corner: 27°13'57.71"N 68°17'55.97"E Upper left corner:27°14'0.55"N 68°17'49.95"E Lower right corner: 27°13'51.72"N 68°17'48.29"E Lower left corner: 27°13'53.59"N 68°17'45.29"E **Nearest Known Location:** Qureshi Goth	8.5
7	Larkana	1,368	27	Upper right corner: 27°42'19.40"N 68°23'34.46"E Upper left corner: 27°42'7.03"N 68°23'14.94"E Lower right corner: 27°42'10.40"N 68°23'46.90"E Lower left corner: 27°41'53.57"N 68°23'21.54"E **Nearest Known Location:** Bhoonbhat Pur	82.6
				Upper right corner: 27°38'47.54"N 68°19'29.86"E Upper left corner: 27°38'25.06"N 68°18'42.91"E Lower right corner: 27°38'28.72"N 68°19'32.25"E Lower left corner: 27°38'7.77"N 68°18'49.01"E **Nearest Known Location:** Metlo Village	180
				Upper right corner: 27°25'29.30"N 68°12'34.99"E Upper left corner: 27°25'24.02"N 68°12'15.63"E Lower right corner: 27°24'53.36"N 68°13'13.72"E Lower left corner: 27°24'35.39"N 68°12'23.33"E **Nearest Known Location:** Goth Dolat Khokhar	370
				Upper right corner: 27°17'39.47"N 68° 6'16.25"E Upper left corner: 27°17'35.37"N 68° 6'6.16"E Lower right corner: 27°17'0.75"N 68° 6'50.89"E Lower left corner: 27°16'55.59"N 68° 6'29.80"E **Nearest Known Location:** Ghulam Hussain Butt	158
				Upper right corner: 27°14'36.50"N 68° 3'57.05"E Upper left corner: 27°14'19.55"N 68° 3'16.09"E Lower right corner: 27°14'17.72"N 68° 4'2.69"E Lower left corner: 27°13'58.48"N 68° 3'20.96"E	194

				Nearest Known Location: Veehar	
8	Matiari	178	4	Upper right corner: 25°32'15.17"N 68°28'20.38"E Upper left corner: 25°32'15.44"N 68°28'5.41"E Lower right corner: 25°32'9.18"N 68°28'15.41"E Lower left corner: 25°32'9.37"N 68°28'6.00"E **Nearest Known Location:** Dater Dino Chand	16.5
				Upper right corner: 25°38'34.14"N 68°30'36.34"E Upper left corner: 25°38'40.90"N 68°30'6.58"E Lower right corner: 25°38'18.60"N 68°30'34.15"E Lower left corner: 25°38'31.42"N 68°30'5.91"E **Nearest Known Location:** Skehat	86.8
				Upper right corner: 25°46'24.79"N 68°24'57.47"E Upper left corner: 25°46'23.91"N 68°24'43.59"E Lower right corner: 25°45'54.69"N 68°24'54.00"E Lower left corner: 25°45'54.42"N 68°24'36.58"E **Nearest Known Location:** Hala	103
				Upper right corner: 25°51'12.35"N 68°23'36.10"E Upper left corner: 25°51'21.34"N 68°23'25.04"E Lower right corner: 25°51'7.82"N 68°23'31.89"E Lower left corner: 25°51'13.66"N 68°23'20.73"E **Nearest Known Location:** Luqman Korejo	21.5
				Upper right corner: 26° 1'6.83"N 68°19'30.30"E Upper left corner: 26° 1'12.59"N 68°19'26.59"E Lower right corner: 26° 1'2.94"N 68°19'23.18"E Lower left corner: 26° 1'5.30"N 68°19'18.24"E **Nearest Known Location:** Shrine of Makhdoom Haroon	13.7
9	Naushahro Feroze	965	19	Upper Right Corner 26°58'45.82"N, 68°3'11.07"E Upper Left Corner 26°58'45.17"N, 68° 3'13.97"E Lower Right Corner 26°58'41.47"N, 68° 3'8.30"E Lower Left Corner 26°58'38.64"N, 68° 3'12.33"E **Nearest Known Location:** Bhorti	5
				Upper Right Corner 26°57'9.19"N, 68° 2'58.96"E	52

				Upper Left Corner 26°57'7.72"N, 68° 3'14.90"E Lower Right Corner 26°56'57.68"N, 68°2'52.52"E Lower Left Corner 26°56'54.69"N, 68° 3'15.67"E **Nearest Known Location:** Bhorti	
				Upper Right Corner 27° 5'48.83"N,68°11'14.34"E Upper Left Corner 27° 5'53.03"N, 68°11'17.72"E Lower Right Corner 27° 5'38.38"N,68°11'16.86"E Lower Left Corner 27° 5'37.94"N, 68°11'19.20"E **Nearest Known Location:** Kamal Dero Village	9
				Upper Right Corner 27° 8'43.83"N,68°14'20.09"E Upper Left Corner 27° 8'44.89"N, 68°14'28.47"E Lower Right Corner 27° 8'33.23"N,68°14'20.17"E Lower Left Corner 27° 8'32.91"N, 68°14'23.82"E **Nearest Known Location:** Niaz Hussain Jatoi Village	14
10	Shikarpur	1,489	30	Upper right corner: 28° 0'49.96"N 68°56'2.30"E Upper left corner: 28° 0'50.29"N 68°55'12.30"E Lower right corner: 28° 0'29.13"N 68°55'38.12"E Lower left corner: 28° 0'41.65"N 68°55'11.24"E **Nearest Known Location:**	137
				Upper right corner: 27°56'26.34"N 68°48'41.55"E Upper left corner:27°56'31.30"N 68°47'53.16"E Lower right corner: 27°56'11.25"N 68°48'45.32"E Lower left corner: 27°55'58.17"N 68°48'14.97"E **Nearest Known Location:** Sumrani	200
				Upper right corner: 27°50'26.33"N 68°40'35.00"E Upper left corner:27°50'15.25"N 68°39'17.25"E Lower right corner: 27°49'48.50"N 68°40'12.69"E Lower left corner: 27°49'36.00"N 68°39'27.85"E **Nearest Known Location:** Lakhi Ghulam Shah	528
				Upper right corner: 27°46'21.79"N 68°31'55.03"E Upper left corner:27°45'53.92"N 68°31'7.46"E	595

				Lower right corner: 27°45'26.50"N 68°32'21.55"E Lower left corner: 27°45'24.56"N 68°31'2.45"E **Nearest Known Location:** Shaikhan Ji Wandh	
11	Sujawal	194	4	Upper right corner: 24°51'2.88"N 68°11'7.12"E Upper left corner: 24°51'5.73"N 68°10'36.06"E Lower right corner: 24°50'41.92"N 68°11'4.05"E Lower left corner: 24°50'47.04"N 68°10'29.87"E **Nearest Known Location:** Laiqpur	142
				Upper right corner: 24°47'44.57"N 68°10'8.72"E Upper left corner: 24°47'58.05"N 68° 9'45.62"E Lower right corner: 24°47'37.37"N 68°10'2.68"E Lower left corner: 24°47'48.62"N 68° 9'38.55"E **Nearest Known Location:** Darro	60
				Upper right corner: 24°41'57.45"N 68° 3'0.36"E Upper left corner: 24°41'55.35"N 68° 2'41.29"E Lower right corner: 24°41'40.33"N 68° 3'3.94"E Lower left corner: 24°41'42.73"N 68° 2'41.59"E **Nearest Known Location:** Belo City	63.9
				Upper right corner: 24°37'21.01"N 68° 2'28.78"E Upper left corner: 24°37'19.92"N 68° 2'8.46"E Lower right corner: 24°37'8.70"N 68° 2'30.31"E Lower left corner: 24°37'11.20"N 68° 2'9.08"E **Nearest Known Location:** Saeedpur	47.1
				Upper right corner: 24°22'55.13"N 67°59'22.01"E Upper left corner: 24°22'48.35"N 67°58'46.59"E Lower right corner: 24°22'29.59"N 67°59'37.66"E Lower left corner: 24°22'20.30"N 67°58'55.42"E **Nearest Known Location:** Chuhar Jamali	249
12	Sukkur	1,958	39	Upper right corner: 27°51'43.83"N 69°11'27.05"E Upper left corner: 27°51'27.52"N 69°10'33.23"E Lower right corner: 27°51'25.37"N 69°11'32.00"E Lower left corner: 27°50'58.84"N 69°10'33.93"E	290

				Nearest Known Location: Mula Ali Mehsar Village	
				Upper right corner: 27°45'39.00"N 68°47'50.35"E Upper left corner: 27°45'23.43"N 68°47'13.58"E Lower right corner: 27°45'19.61"N 68°48'7.23"E Lower left corner: 27°45'3.66"N 68°47'35.52"E **Nearest Known Location:** Dreha	205
				Upper right corner: 27°45'0.32"N 69° 2'48.58"E Upper left corner: 27°44'51.08"N 69° 2'29.81"E Lower right corner: 27°44'45.45"N 69° 2'44.53"E Lower left corner: 27°44'41.08"N 69° 2'36.24"E **Nearest Known Location:** Sangi Village	36.8
				Upper right corner: 27°40'29.31"N 68°54'27.27"E Upper left corner: 27°40'21.14"N 68°53'46.26"E Lower right corner: 27°40'15.41"N 68°54'32.99"E Lower left corner: 27°40'6.89"N 68°53'47.50"E **Nearest Known Location:** RCW Rohri	133
13	Thatta	118	2	Upper right corner: 25°15'27.94"N 68°12'42.35"E Upper left corner: 25°15'24.58"N 68°11'14.72"E Lower right corner: 25°14'16.14"N 68°12'43.08"E Lower left corner: 25°14'18.13"N 68°11'13.54"E **Nearest Known Location:** National Dairy Farm	1,298
				Upper right corner: 25° 6'50.43"N 68°12'38.71"E Upper left corner: 25° 6'55.72"N 68°11'35.87"E Lower right corner: 25° 5'57.15"N 68°12'32.80"E Lower left corner: 25° 5'57.22"N 68°11'36.59"E **Nearest Known Location:** Punhal Khan Jamali	707
				Upper right corner: 24°52'15.01"N 67°58'13.50"E Upper left corner: 24°52'23.80"N 67°58'1.78"E Lower right corner: 24°51'43.47"N 67°57'43.43"E Lower left corner: 24°51'50.77"N 67°57'32.36"E **Nearest Known Location:** Keenjhar Farm House	129

				Upper right corner: 24°41'18.22"N 67°52'21.30"E Upper left corner: 24°41'21.02"N 67°51'28.13"E Lower right corner: 24°40'19.02"N 67°52'12.72"E Lower left corner: 24°40'18.42"N 67°51'9.68"E **Nearest Known Location:** MSAMS Army Public School	759
				Upper right corner: 24°18'42.16"N 67°40'15.92"E Upper left corner: 24°18'37.62"N 67°40'10.66"E Lower right corner: 24°18'34.03"N 67°40'24.88"E Lower left corner: 24°18'29.48"N 67°40'19.93"E **Nearest Known Location:** Haji Qasim Baloch	18
Total		**15,513**	**310**		

Note: These are preferred location of open and unused grounds and have been selected by applying different criteria. However, DDMAs can use these suggested sites or can alter according to operational requirements.

Chapter 4: Identification of Physical Vulnerabilities

Using multiple sources such as DMIS database and information obtained from DDMAs and other line departments physical vulnerabilities with regard to water hazard have been identified. These vulnerabilities include identification of vulnerable embankments and low-lying areas in major cities where water cannot recede without artificial pumping.

4.1 Vulnerable Locations of Embankments

S #	Name of Embankments	Geographical Location
1	K.K Link Bund Mile 0/0 to 2/6 First Defence Line	28.271019, 69.415957
2	K.K. Feeder Bund RD-79 to RD-84.5 First Defence Line	28.263016, 69.399806
3	Qadirpur Bund 0/0 to 1/2 First Defence Line	28.100434, 69.320883
4	Qadirpur Loop Bund 0 0/ to 8 4/ First Defence Line	28.057555, 69.241153
5	New Makhwani Bund Mile 0/0 to 4/0 First Defence Line	28.146390, 69.136555
6	Tori Bund Mile 0/0 to 3/1 First Defence Line	28.080078, 69.028724
7	Ghumra Loop Bund Mile 0/0 to 4/6	27.794639, 68.673563
8	Moria Loop Bund Mile 0/0 to 1/2	27.618121, 68.345774
9	Baiji Bund 0/0 to 10/3	27.799353, 69.034380
10	R.N Front Bund Mile 0/0 to 0/7	27.689707, 68.903616

11	S.B Bund Mile 16/2 to 9/2	27.849654, 68.830936
12	Ruk Loop Bund Mile 0/0 to 2/4	27.786864, 68.641344
13	Akil Loop Bund Mile 0/0 to 0/7	27.584404, 68.292395
14	Abad Ring Bund Mile 0/0 to 0/5	27.460401, 68.262546
15	Larkana Sehwan Bund	27.350910, 68.186334
16	Larkana Sehwan Bund	27.315392, 68.145021
17	S.M. Bund Mile 7/4 to 12/7 First Defence Line	27.175318, 68.199634
18	S.M. Bund Mile 35/4 to 60/0 First Defence Line	26.945787, 68.014380
19	S.M. Bund Mile 35/4 to 60/0 First Defence Line	26.842455, 67.955245
20	Larkana Sehwan Bund	26.939893, 67.879897
21	RBOD In Progress	26.243102, 67.913276
22	Old Mud Loop Bund Mile 0/0 to 2/2 (Acting as Front-Line Bund)	26.133259, 68.137679
23	S.M Bund Mile 123/0 to 137/6 First Defence Line	25.869394, 68.342056
24	Cross Bund Mile 0/0 to 0/4 First Defence Line	25.790396, 68.386526
25	RBOD Under Construction	25.588959, 68.362698

26	Hajipur Bund Mile 0/0 to 20/2	25.114555, 68.359743
27	Hajipur Bund Mile 0/0 to 20/2	25.056143, 68.275149
28	M.S Bund Mile 0/0 to 24/7	24.943535, 68.234221
29	Sonde Hillaya Bund Mile 0/0 to 3/2	24.975071, 68.136861
30	M.S Bund Mile 0/0 to 24/7	24.847446, 68.135802
31	Panna Baghar Bund Mile 0/0 to 15/1	24.673029, 67.921452
32	M.S Bund Mile 29/2 to 58/2	24.619167, 68.025062

4.2 Low Lying Areas in Major Cities of the Province

S#	City	Total Locations
1	Karachi	199
2	Hyderabad	43
3	Shaheed Benazirabad	20
4	Mirpurkhas	49
5	Sukkur	12

Details of low lying are given at Appendix III.

Chapter 5: Preparedness State

The unprecedented situation during 2022 flood stretched provincial capacity to cope with the disaster situation and various local and international actors joined hands with government of Sindh to manage demand and supply for disaster response and relief.

Based on likely scenario modelled through extended weather forecast during monsoon 2023, necessary stocks have been prepared at provincial and district levels to response any untoward situation. Details of available stock are given in successive tables and graphs.

5.1 Provincial Level (PDMA) Store Status

Machinery

Dewatering Pumps (Varying Power)	383
Generators (Varying Power)	35
RO Plant (Varying Capacities)	9
Fiber Boats with OBM	6

Hygiene/ Sanitation

Portable Toilet	6
Squat Toilet	160
Clothes/ Sanitary Napkins	10,050
Commode Chair	79
Dignity Kit	336
Soap	1,300
Towel	11,000

Shelter

Tent	310,168
Mosquito Nets	1,819,902
Animal Mosquito Nets	68,890
Tarpaulin	1,668
Water Tank (Varying Capacities)	31
Plastic Mats	4,275

Household

Blankets	209,327
Bedsheets	5,138
Plastic Bucket	27,910
Jerry Cans	10,144
Steel Buckets	60
Kitchen Sets	7,251
Wheel Chair	94
Water Cooler	225
Stoves	50
Solar Lamps	300
Solar Home System	236

Rescue:

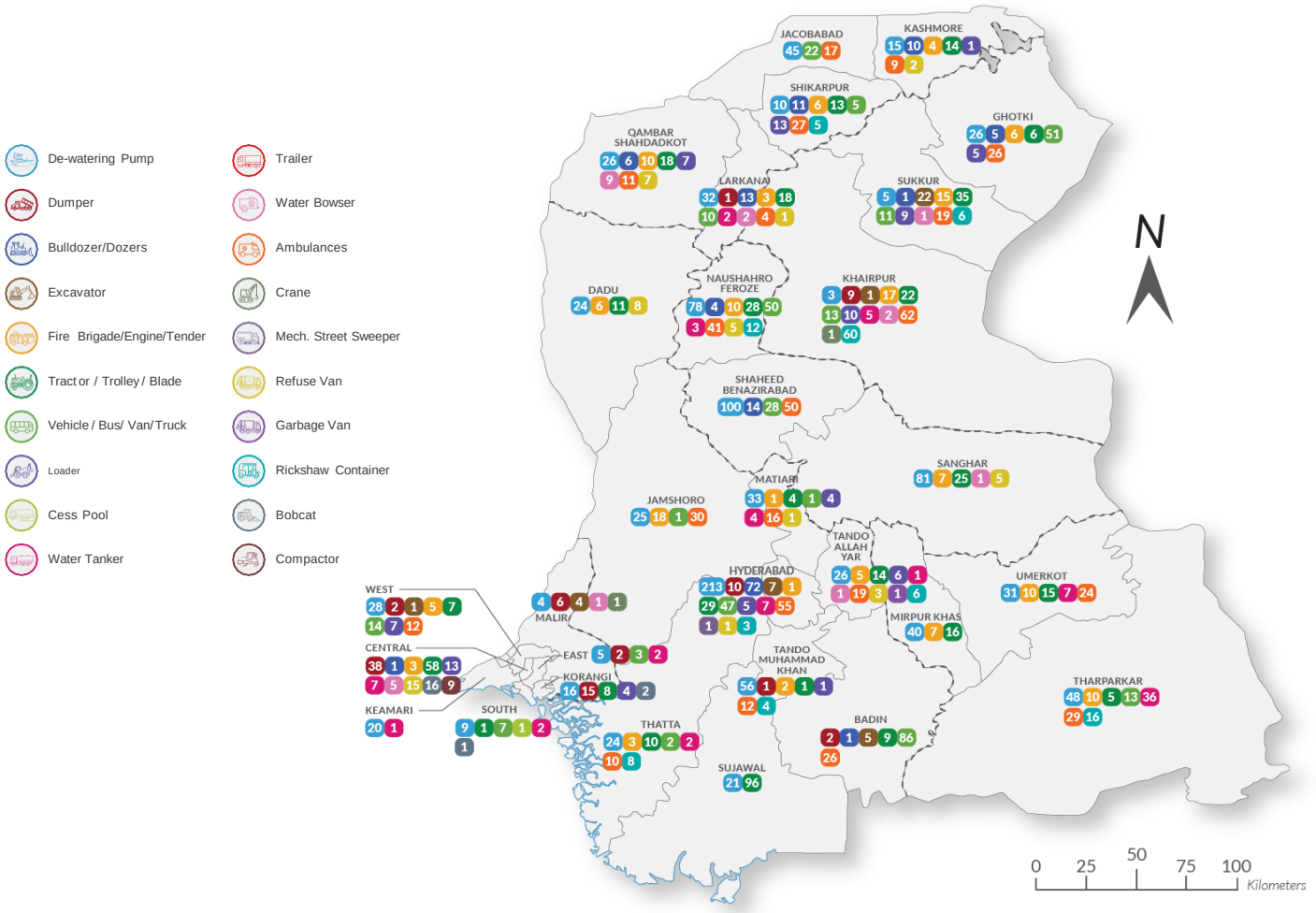
Life Jackets	975
Life Rings	100
Mega Phone	9
Life Living Floating Rope	76
Signboard	99
Emergency Solar Lights	200

Table 5.1 Provincial level (PDMA) store status

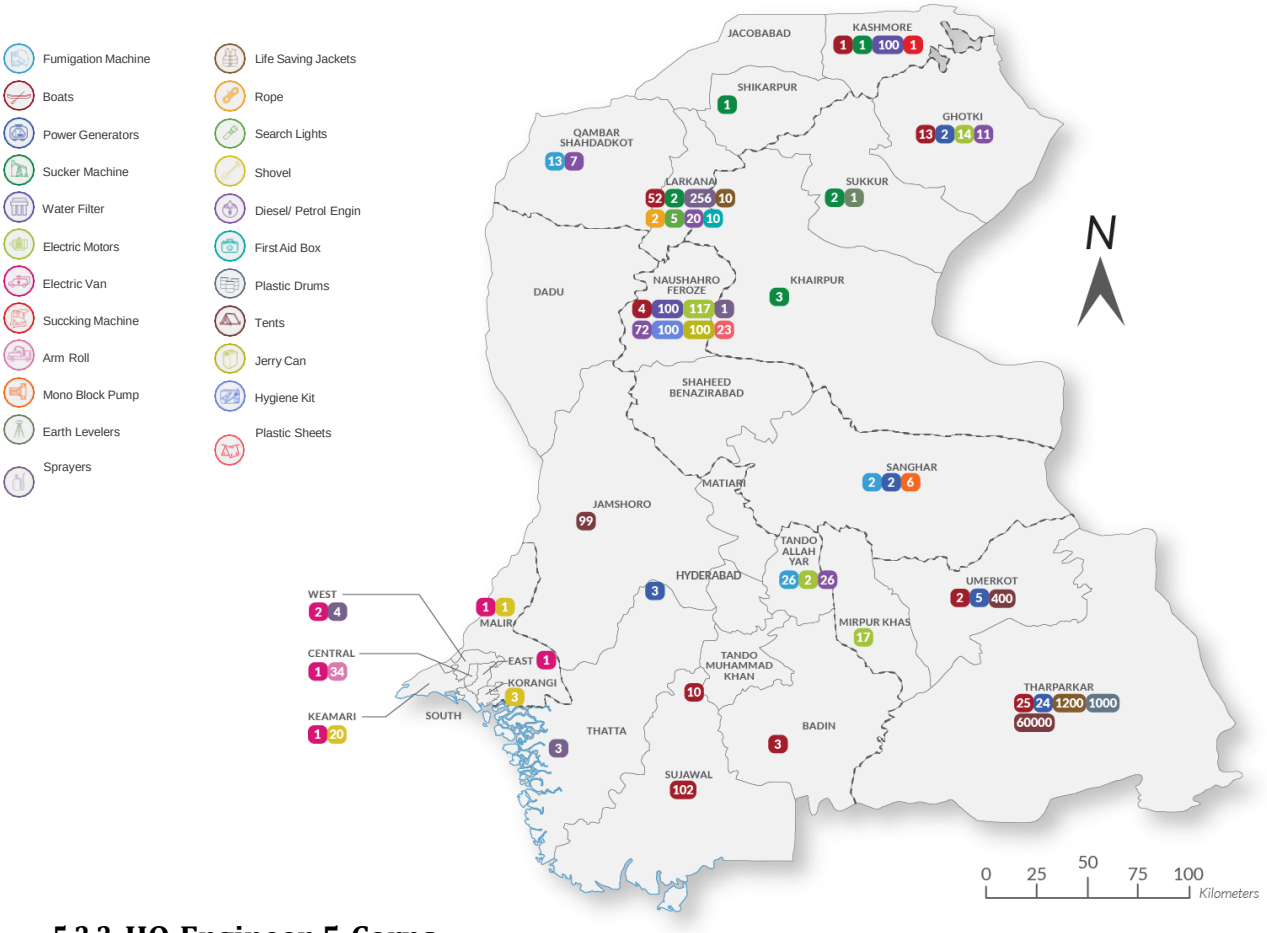
5.2 Preparedness Status of Partners

5.2.1 District Disaster Management Authorities

Heavy Machinery



Machinery



5.2.2 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

Table 5.2.2 Store status of HQ Engineer 5 corps

5.2.3 Pakistan Navy

S#	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 ltr)	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

Table 5.2.3 Store status of PN

5.3 Dewatering Pump Distribution Plan

The Contingency Plan 2023 is based on seasonal / extended forecasts and anticipated scenario for Sindh is riverine flood in Medium – High range. Therefore, preparation focuses more towards riverine flood. However, the possibility of occasional showers over different parts of the Province cannot be ruled out. In anticipation of urban floods caused by scatted showers, following arrangements shall be made for dewatering from urban centers;

- ✓ Dewatering machines / pumps have been stocked in ready position for deployment
- ✓ Necessary resources have been identified for deployment
- ✓ All critical / problematic low-lying areas in urban centers have been identified.

Following distribution and deployment plan for dewatering machines shall be followed;

S#	Division	Number of Machines (to be deployed by PDMA)
1	Karachi	30 +10 (standby)
2	Hyderabad	20 +5 (standby)
3	Shaheed Benazirabad	5 +2 (standby)
4	Mirpurkhas	20 +5 (standby)
5	Sukkur	5 +2 (standby)
6	Larkana	5 +2 (standby)

To cater for any emergent requirements, PDMA shall retain rest of the pumps in respective warehouses in ready position to support district disaster management authorities.

5.4 Actions to Respond Unforeseen Emergency

- 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 6: Action Plan

Following action plan is recommended for management of any untoward situation arising during the monsoon / flood season;

S#	Actions	Execution
1	Close coordination with Pakistan Meteorological Department and Flood Forecasting Division	PDMA
2	Monitoring and sharing of flows at barrages of Sindh	Irrigation Department
3	Inspection of flood protective embankments	Irrigation Department
4	Dissemination of warning for flood plain evacuation	DDMAs official sources and mobilization of local influential
5	Evacuation	In consultation with PDMA, DDMAs will issue and disseminate warnings for evacuation from suspected risk zones. Evacuation shall be conducted by the communities with the assistance of DDMAs.
6	Establishment of relief camps	Concerning DDMAs in their respective administrative jurisdictions with support of PDMA
7	Provision temporary health facilities in relief camps	Health Department
8	Provision of veterinary health services in relief camps	Livestock Department
9	Management of Relief Camps	DDMAs with support and engagement of local volunteers and NGOs
10	Decommissioning of relief camps and retrieval of non-consumable and reusable camp items	After recession of flood water, DDMAs shall discontinue relief camps and shall arrange retrieval of items to stores

Chapter 7: Emergency Contacts

The communities and any other relevant entity can contact on following number during emergency

Office	Contact No
Provincial Emergency Operation Center (PEOC), Provincial Disaster Management Authority, Government of Sindh	Emergency No: 1736 (Toll free) (021) 99332742, 35381810 0335-5557362, 0333- 2497362

LIST OF DIVISIONAL COMMISSIONERS

S#	Designation	District	Tel Off.	Fax
COMMISSIONER KARACHI DIVISION				
1	Commissioner	Karachi	9205610- 14 9205607	99205652, 99205639
2	Deputy Commissioner	East	99231214 99231215	99230994
3	Deputy Commissioner	West	99333177 99333172	99333173
4	Deputy Commissioner	Keamari	99333177 99333172	99333173
5	Deputy Commissioner	South	99205644	99202296
6	Deputy Commissioner	Central	99260037 99260038	99260036
7	Deputy Commissioner	Malir	99333785-6	35001301
8	Deputy Commissioner	Korangi	99333922	99333923
COMMISSIONER HYDERABAD DIVISION				
1	Commissioner	Hyderabad	(022) 9200112 - 13	9200114 9201316
2	Deputy Commissioner	Hyderabad	(022) 9200244	9200976
3	Deputy Commissioner	Jamshoro	(0223) 870135, 871942 - 44	871199, 871954
4	Deputy Commissioner	Dadu	(025) 9200250, 9200251	9200252
5	Deputy Commissioner	Matiari	(022) 2760033, 2760032	2760011
6	Deputy Commissioner	Tando Allahyar	(022) 9250702-3	9250703
7	Deputy Commissioner	Tando M. Khan	(022) 9260701-2-9	9260709
8	Deputy Commissioner	Thatta	(0298) 920061, 770359	R:920058, O:920069
9	Deputy Commissioner	Sujawal	(0298) 510051	510051
10	Deputy Commissioner	Badin	(0297) 920013	861471, 920021
COMMISSIONER SUKKUR DIVISION				
1	Commissioner	Sukkur	(071) 9310834, 9310835	O:9310837, R:9310619
2	Deputy Commissioner	Sukkur	(071) 9310601-600	9310602

3	Deputy Commissioner	Khairpur	(0243) 9280200, 9280201	9280202
4	Deputy Commissioner	Ghotki	(0723) 661616, 661675	(Of)661677 (Re)651628
COMMISSIONER SHAHEED BENAZIRABAD DIVISION				
1	Commissioner	Shaheed Benazirabad	(0244) 9370333, 81069	9370392, 381068
2	Deputy Commissioner	Shaheed Benazirabad	(0244) 381494, 9370337	9370338
3	Deputy Commissioner	N. Feroze	(0242) 92010, 448256	920103
4	Deputy Commissioner	Sanghar	(0235) 920116-7	920101
COMMISSIONER LARKANA DIVISION				
1	Commissioner	Larkana	(074) 9410244, 9410245	(R)9410293, (O)9410394-5
2	Deputy Commissioner	Larkana	(074) 9410318, 9410243	9410336, 9410293
3	Deputy Commissioner	Kamber Shahdadkot	(074) 9411100	9411102, 9411108
4	Deputy Commissioner	Shikarpur	(0726) 920200, 920201	920202
5	Deputy Commissioner	Jacobabad	(0722) 921201-2	921003
6	Deputy Commissioner	Kashmore	(0722) 570904, 35843006	570902
COMMISSIONER MIRPURKHAS DIVISION				
1	Commissioner	Mirpurkhas	(0233) 9290052, 9290053-54	9290055-59
2	Deputy Commissioner	Mirpurkhas	(0233) 9290069, 9290070	9290254
3	Deputy Commissioner	Umerkot	(0238) 920019-20	920020
4	Deputy Commissioner	Tharparkar	(0232) 920667, 920825	920818

Chapter 8: Appendixes

To maintain the readability of the document, the maps and charts have been provided separately accessible on Disaster Management Information System (DMIS). DMIS can be reached at http://www.dmis-pdma.gos.pk/DMIS/dashboard.php.

The interested users are required to register themselves for accessing the maps available in Sindh GIS module of DMIS. The maps are available on;

Step 1: Sindh GIS module
Step 2: Layers
Step 3: Contingency Plan 2023

- Vulnerable Embankments
- Landuse within Flood Plain
- Topographic and Drainage Map of Sindh
- Low Lying Areas
- Likely Riverine Flows and Inundation Maps (Medium and High - Very High Flood)
- Relief Camps

The tables, graphs and charts used in the Plan can be accessed at http://dmis-pdma.gos.pk/DMIS/Contingency-Plan-2023/index.html

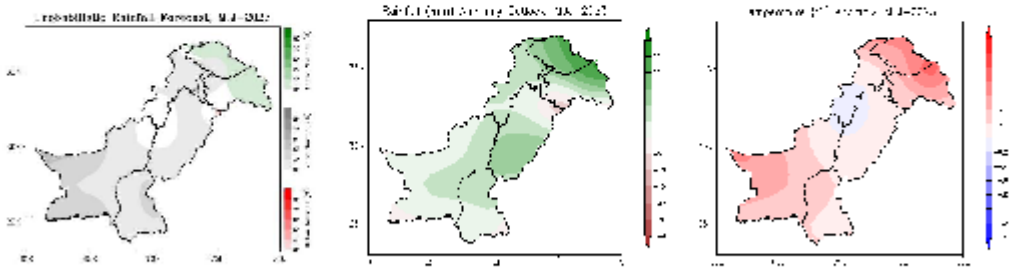
Appendix-1: Detailed Seasonal Forecast

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

Tel:051-9250364
Fax:051-9250368

Date: 3nd May 2023

Outlook for May–June-July (MJJ), 2023



Synoptic situation:

During upcoming MJJ season of 2023, and it is anticipated that the ENSO state will remain neutral for the most part, but towards the end of the season, it may shift towards the El Nino phase. Furthermore, the IOD is expected to remain neutral initially, but it may shift towards a positive phase later on. By taking into account these global and regional circulation patterns, the outlook for Pakistan in the MJJ season of 2023 is as follows:

Seasonal Outlook:

The above mentioned climatic conditions suggest that most parts of the country are likely to receive normal* rainfall, with northern areas possibly receiving slightly more than normal rainfall.

The seasonal average temperatures are expected to remain in the typical to higher-than-typical seasonal range across most of the country. However, towards the end of the season, there is a possibility of an increase in temperature in Upper Khyber Pakhtunkhwa, Gilgit-Baltistan, Kashmir and Baloshistan.

Impacts:

- Rising temperatures in the Upper Khyber Pakhtunkhwa, Gilgit-Baltistan, and Kashmir may lead to a higher rate of snowmelt, which in turn will increase the amount of water flowing into rivers.
- Farmers are advised to stay vigilant and plan water conservation for upcoming Kharif season cultivation.
- Based on current climatic conditions the expected rainfall during the upcoming monsoon season in Pakistan is likely to be normal*.
- During upcoming monsoon season the occurrence of extreme weather events at isolated locations may not be ruled out.

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

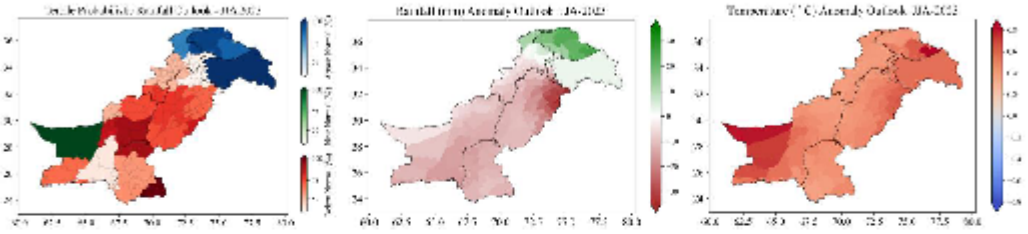
* Normal = 30-yeaers average climatic conditions

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

Tel:051-9250364
Fax:051-9250368

Date: 30th May 2023

Outlook for June-July-August (JJA), 2023



Synoptic situation:

During JJA 2023, moderate El Nino conditions are anticipated, with a consistently positive IOD. Considering these global and regional circulation patterns, the outlook for Pakistan during the season is as follows:

Seasonal Outlook:

The climatic conditions indicate **below normal*** rainfall for most parts of the country. Some areas in Northern Pakistan may receive slightly above normal rainfall, while western parts of Baluchistan, including the coastal belt, may experience near normal rainfall during the forecast season.

Seasonal average temperatures will mostly fall within the typical to higher-than-typical range. However, towards the season's end, Upper Khyber Pakhtunkhwa, Gilgit-Baltistan, Kashmir, and Baluchistan could see a temperature increase.

Impacts:

- Soaring temperatures in Upper Khyber Pakhtunkhwa, Gilgit-Baltistan, and Kashmir may accelerate snowmelt, increasing river flow.
- The upcoming season is expected to dominate with low rainfall and increasing temperature resulting in a gradual reduction in soil moisture in agricultural plains.
- Additional irrigation will be needed for Kharif crops and vegetables, particularly in the southern half of the country.

Note: Keeping in view of the rapid changes in climate system dynamics, the outlook is updated during the last week of each month.

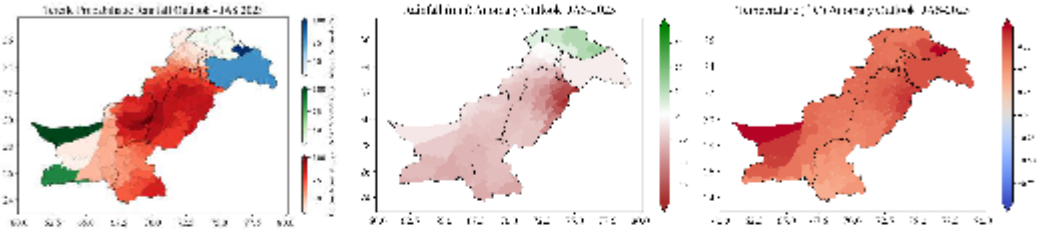
*Normal = 30-years average climatic conditions.

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

Tel:051-9250364
Fax:051-9250368

Date: 6th June 2023

Outlook for Monsoon (JAS, 2023)



Synoptic situation:

During the upcoming monsoon season (July-August-September, JAS-2023), it is anticipated that El Niño conditions will prevail, while the Indian Ocean Dipole (IOD) will remain in positive phase. Taking into account these global and regional circulation patterns, the outlook for Pakistan is as follows:

Seasonal Outlook:

The given climate conditions suggest that most areas may have normal to slightly below-normal rainfall. Northern regions may experience slightly above-normal rainfall, while western parts of Balochistan can expect near-normal rainfall.

Seasonal temperatures are expected to remain within normal* to higher than normal* ranges across the country.

Impacts:

- Possibility of occasional extreme hydro-meteorological events over catchment areas cannot be ruled out, that may generate riverine floods in the major rivers.
- Likelihood of urban flooding, hill torrents, and flash floods may also exist due to isolated heavy downpours.
- Soaring temperatures in Upper Khyber Pakhtunkhwa, Gilgit-Baltistan, and Kashmir could accelerate snowmelt, resulting in an increased flow of water into rivers.
- Farmers are advised to stay vigilant and plan water conservation for upcoming Kharif season cultivation.

Note: The current outlook is based on the May atmospheric conditions.
In case of significant changes in atmospheric conditions, an update of monsoon outlook will be issued by the end of the June.

$Normal = 30 - years\ average\ climatic\ conditions.$

25th Session of South Asian Climate Outlook Forum (SASCOF-25)
and
Climate Services User Forum (CSUF)
27-29, April 2023 (Online)

Consensus Statement on the Seasonal Climate Outlook over South Asia for the 2023 Southwest Monsoon Season (June – September)

Summary

Normal to below normal rainfall is likely during the 2023 southwest monsoon season (June – September) over most parts of the South Asia. Geographically, above-normal rainfall is likely over northern most parts and northwest of the region as well as parts of eastern and southern regions of South Asia. However, below normal rainfall is likely over some areas northwest, central and north-eastern parts of the region. The seasonal rainfall is 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 most parts of South Asia except parts of the foothills of Himalaya. The seasonal maximum temperatures are most likely to be above normal over most parts of the region except central and parts of the southern region of South Asia.

This regional climate outlook for the 2023 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 25th session of the South Asian Climate Outlook Forum (SASCOF-25) 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 multi-year La Niña has ended around March 2023 and currently neutral conditions are prevailing over the tropical Pacific Ocean. Based on the global climate model forecasts, there is strong consensus among experts that the El Niño conditions are likely to develop during the southwest monsoon season. However, there is uncertainty in its strength and the time of its onset. 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 2023 southwest monsoon season (June to September) was finalized during the 25th session of the South Asian Climate Outlook Forum (SASCOF-25) held during 27-29 April 2023 via video conferencing. 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. The multi-year La Niña which began in September 2020 (with a short break in boreal summer) has ended in March 2023 and currently a neutral ENSO conditions are observed over the tropical Pacific. The latest global models forecast indicate that the El Niño conditions are likely to develop 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 positive IOD conditions are likely to develop during the monsoon season.

Snow Cover over the Northern Hemisphere

The winter and spring snow cover extent has a general inverse relationship with the subsequent Asian summer monsoon rainfall. The northern hemisphere snow cover areas during February and March 2023 were below normal. The Eurasian snow cover area was 5th lowest during March 2023 considering the data in the past 57 years.

Regional Outlook for the 2023 Southwest Monsoon Rainfall over South Asia

A regional climate outlook for the 2023 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 the El Nino conditions are likely to develop 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 El Nino conditions contribute to the normal to below 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.

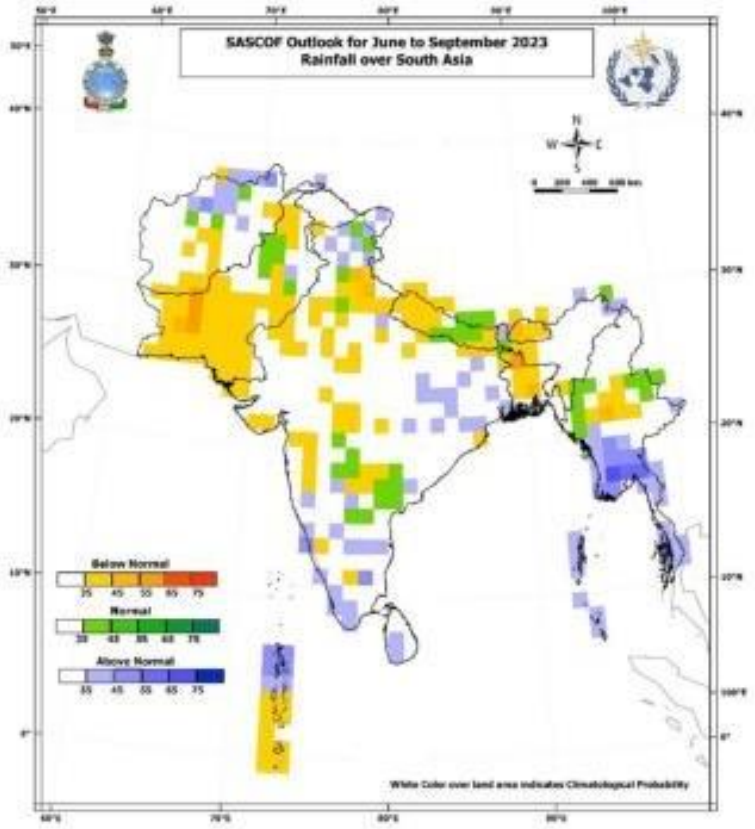


Fig.1a. Probability of the most likely category for the 2023 southwest monsoon rainfall over South Asia.

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

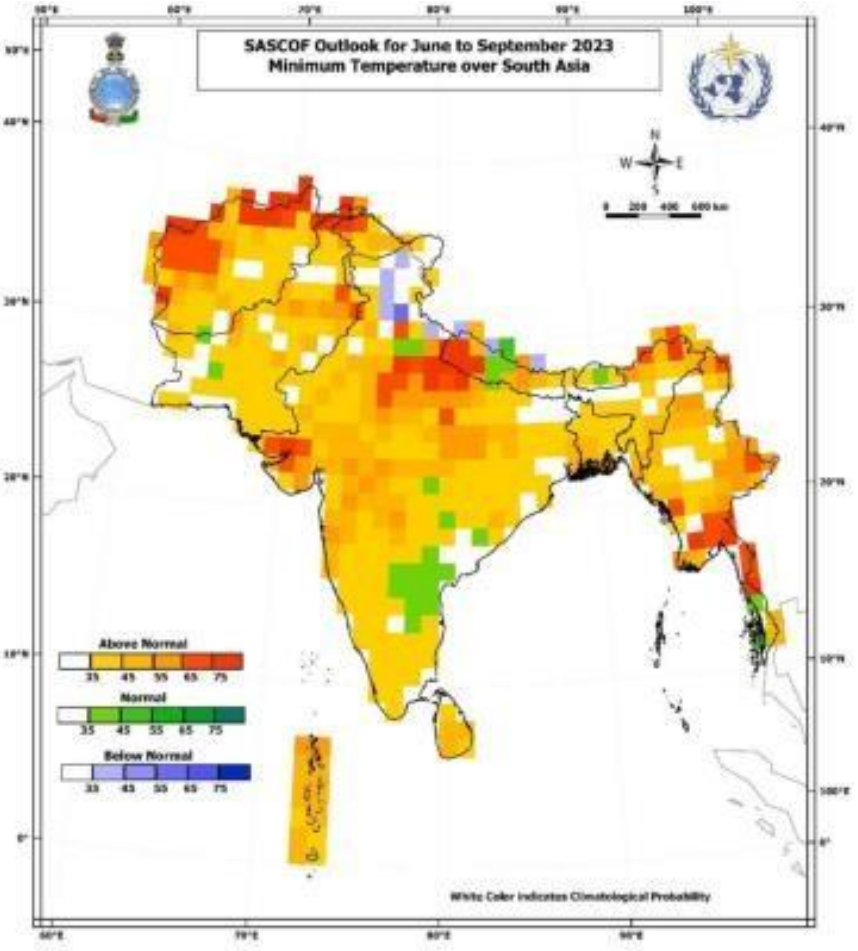


Fig.1b. Consensus outlook for the monsoon season (June to September 2023) Minimum Temperature and over South Asia.

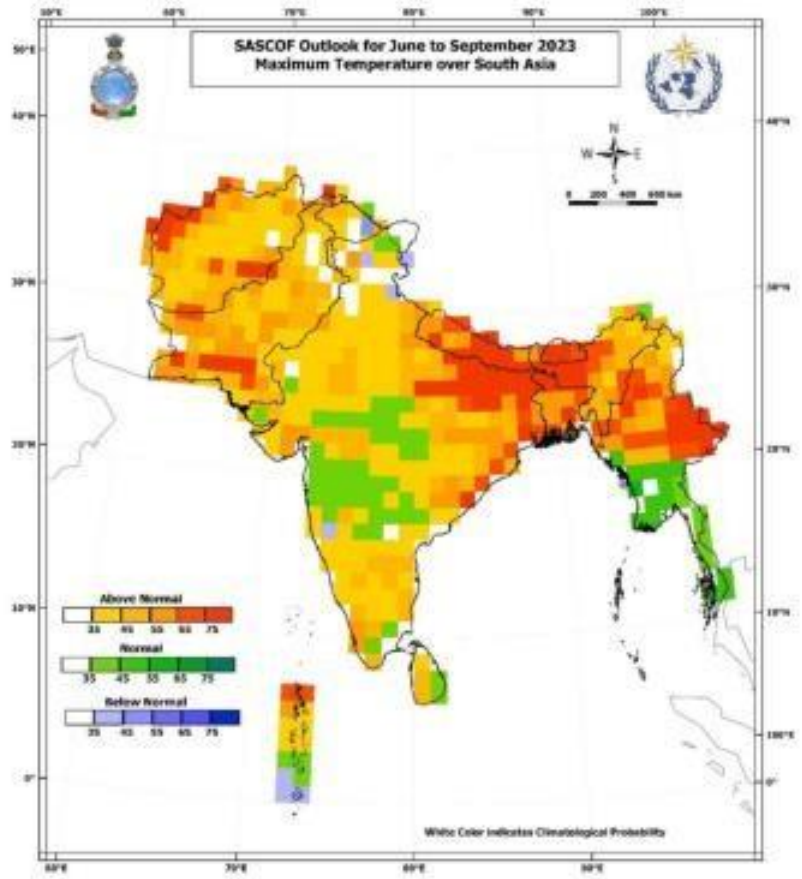


Fig.1c. Consensus outlook for the monsoon season (June to September 2023) Maximum Temperature and over South Asia.

The outlook for the southwest monsoon rainfall and Temperature (Minimum and 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 below normal rainfall is likely during the 2023 southwest monsoon season (June – September) over most parts of the South Asia. Geographically, above-normal rainfall is likely over extreme north and northwest of the region as well as parts of eastern and southern regions of South Asia. However, below normal rainfall is likely over some areas northwest, central and north-eastern

parts of the region. The seasonal rainfall is likely to be normal or of climatological probabilities over the remaining areas of the region.

Consensus outlook on minimum temperatures for June to September 2023 season suggests during the season, above normal minimum temperatures are likely over most parts of South Asia except parts of the foothills of Himalaya.

Consensus outlook on maximum temperatures for June to September 2023 season suggests that the seasonal maximum temperatures are most likely to be above normal over most parts of the region except central and parts of the southern region of South Asia.

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 JJAS2022 issued by SASCOF-22

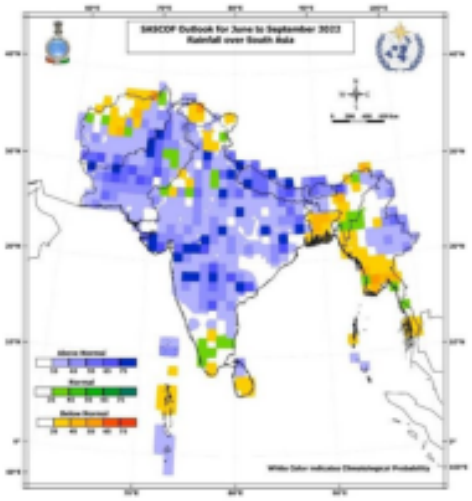


Fig 2a. Consensus outlook map for 2022 southwest monsoon rainfall over South Asia

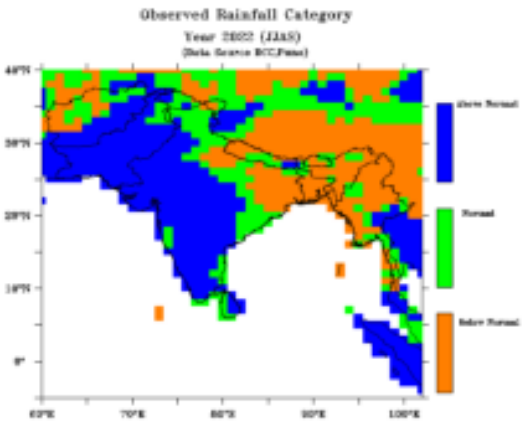


Fig 2b. Observed rainfall distribution during 2021 southwest monsoon season over South Asia expressed as the grid point rainfall tercile categories (base period 1982 to 2010). (Merged data set created using various gridded data sets like CHIRPS, IMD, BMD etc.)

The outlook for the 2022 southwest monsoon season (June to September) showed in Fig.2a suggested above-normal rainfall over many areas of the northwest

and Central parts of South Asia, along the foot hills of Himalayas. However, below normal was forecasted over some areas north eastern parts of the region.

Fig.2b shows the observed rainfall distribution during the 2022 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. The below normal rainfall observed along the foothills of Himalayas and North eastern parts of the region. The outlook match very well with observation over most of the region. However, there were differences between the observed and forecasted rainfall patterns over along the foot hills of Himalayas. Overall the forecast matches well with observation.

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). IMD, WMO, UKMO and 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), IMD, WMO, UKMO and 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 IMD, WMO, UKMO and 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 IMD, WMO, UKMO and RIMES. The 20th 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 22nd session of the SASCOF (SASCOF-22) and Climate Service User Forum (CSUF) is held online during 26-28 April 2022 and was jointly conducted by IMD, WMO, UKMO and RIMES.

The 23rd session of the SASCOF (SASCOF-23) and Climate Service User Forum (CSUF) was held online during 26-29 September 2022 and was jointly conducted by IMD, WMO, and RIMES. The current 24th session of the SASCOF (SASCOF-24) was held online on 24 November 2022 and was jointly conducted by IMD, WMO, and RIMES. The current 25th session of the SASCOF (SASCOF-25) and Climate Service User Forum (CSUF) is held online and was jointly conducted by IMD, WMO, and 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.

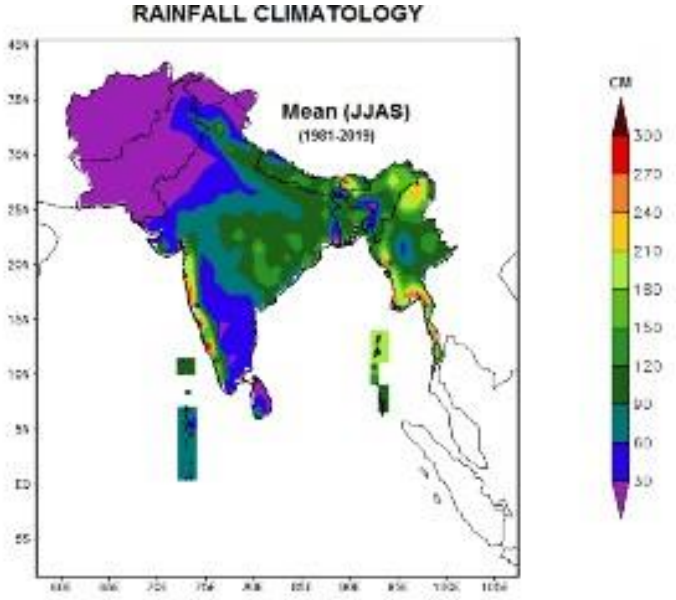


Fig.3 Rainfall climatology for the period 1981-2019 over South Asia
Source: Merged rainfall data over south Asia of RCC, Pune)

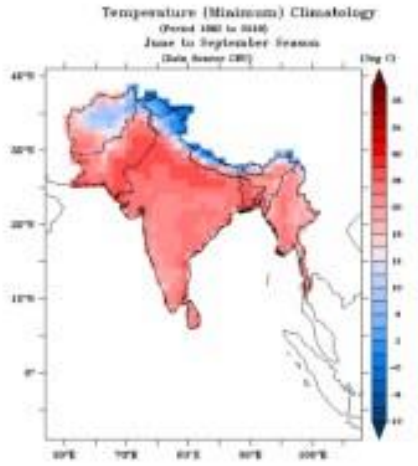


Fig.4 (a) Minimum Temperature climatology for the period 1982-2010 for June to September Season over South Asia

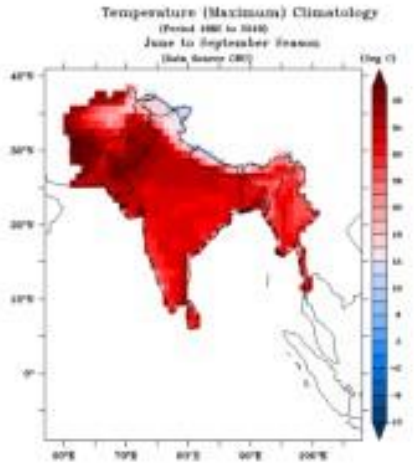


Fig.4 (b) Maximum Temperature climatology for the period 1982-2010 for June to September Season over South Asia

Appendix-2: District wise Inventory Stock Availability

CENTRAL KARACHI

Name of Machinery	Gulberg	New Karachi	North Nazimabad	Liaquatabad
Dumper	11	11	07	09
Tractor Trolley	06	19	09	18
Tractor Blade	02	02	02	Nil
Arm Roll	04	03	09	18
Bobcat	04	06	03	03
Loader	03	08	01	01
Open Truck	04	08	09	01
Water Tank	01	04	02	Nil
Electric Vehicle	01	Nil	Nil	01
Refuse Van	01	14	Nil	Nil
Volvo	06	04	Nil	Nil
Jholla	Nil	Nil	Nil	Nil
Compactors	01	Nil	08	Nil
Tractor with Bucket	01	Nil	01	Nil
Roller	01	Nil	Nil	Nil
Tractor Shawal	Nil	Nil	06	12

KARACHI EAST

1	D/Watering Pumps (Diesel)	02
2	D/Watering Pumps 3x3 (Petrol)	03
3	Sullage Water Tanker with rear dewatering pumps	02
4	Suzuki Pickup	02
5	Hyundai Shehzore	01
6	Tractor with Auto Loader	01
7	Electric Vehicle	01
8	Dump Truck (to be provide by Conservancy Contractor)	02
9	Excavator. Heavy Machinery	to be provided by workshop in charge by hiring from local market as and when required.

KEAMARI

Particular	Available Quantity	Remarks
De-Watering Pumps	05	-
Electric Vehicle	01	-
Bobcat	-	-
Dumper	-	04 Nos may be provided from KMC
Wheel Barrow	10	-
Spades	20	-
Showels	20	-
Brushes	40	-
Tikam	20	-
Bleaching Power	02 Bags	-
Excavator	-	May be provided from KMC
Cess Pool	-	May be provided from KMC
Life Board	-	May be provided from KMC
Front Loader	-	-

KORANGI

Name of Vehicle	Quantity
Fire lorries	03
Sucker machines	01
Side loaders	05
Chill Mazda	02
Small dozers	02
Tractors	05
Heavy dozer	01
Loaders Rickshaw	05
Hydraulic Rickshaw	01
Ravi Suzuki	01

Diesel engine	01
Dewatering pumps	04

MALIR

Status of Stock/ Dewatering Pumps / Machinery Availability in District Malir

Main power	260
Vehicles	4 excavator and 6 dumpers
De-watering pump	11 (held) & 2 (serviceability) total= 13
Rain coat	200
Long shoes	50

DMC machinery available Malir zone

S#	MACHINERY TYPE	NUMBER OF MACHINERY
1	Dewatering Pumps	04
2	Tractors Blade	01
3	Tractor Shawls	01
4	Truck	02
5	Electric Vans	01
6	Water Bowser	01
7	Lifter	01

KARACHI SOUTH

Following vehicles/machinery engaged for monsoon emergency duty

1) De-Watering Pumps 09
2) Cesspool Machine01
3) Tractor Trolly 01
4) Bobcat 01
5) Water Tanker 02
6) Open Trucks 03
7) Streetlight Van 04
8) Hi-Mass 01

KARACHI WEST

Machinery and Vehicles available in DMC West Karachi

S#	Make & model	Registration
1	Volvo fl-06	Ch-101122
2	Volvo fl-06	Ch-159038
3	Volvo fl-06	Ch-101284
4	Volvo fl-06	Ch-159039
5	Volvo fl-06	Ch-158505
6	Hino fb dumper	Ch-16068
7	Hino fb dumper	Ch-11398

8	Hino fb	Ch-10905
9	Hino fb	Ch-10784
10	Hino fb	Ch-16112
11	Hino ff	Ch-21291
12	Hino ff	Ch-21287
13	Hino fd	Ch-10044
14	Bed ford	Gs-3240
15	Issuzu	Gs-8756
16	Tractor trolly	Ch-g002807
17	Tractor trolly	Ch-g002907
18	Tractor trolly mf240	Ch-161453
19	Tractor trolly mf240	Ch-616353
20	Tractor trolly mf240	Gs-9056
21	Tractor ford	Ch-161427
22	Tractor trolly	Ch-2808
List of mechanical machineries		
1	Front wheel loader	702571
2	Front komatso loader	Ch-19912
3	Tractor front loader 385	Ch-g 2806
4	Tractor front loader 385	Ch-500253
5	Tractor excavator	Ch-2902
6	Komatso skid loader (bob cat)	Ch-204021
7	Bob cat skid loader	703571
8	Bach hoe front loader	702405
9	Electric van	G-6046
10	Electric van	Gl-5441
11	Spray machines	04
12	Dewatering pump	15

BADIN

District	Taluka	MC/TC	Total No. of De-watering machine (Diesel)	Total No. of De-watering machine (Petrol)	Remarks
Badin	Badin	Municipal Committee Badin	05	09	All machines under Repair
		TC, Nindo	02	03	
		TC, Kadhan	02	04	
	Matli	MC, Matli	05	08	
		TC, Tando Ghulam Ali	09	0	

	Tando Bagho	TC, Tando Bago	-	05	03 Petrol machines under Repair
		TC, Pangrio	1	2	
		TC, Khoski	04	03	Diesel 03 & 03 Petrol machines under Repair
	Talhar	TC, Talhar	03	06	
		TC, Rajo Khanani	01	01	
	SF Rahu	TC, SF Rahu	-	03	
		TC, Kario Ghanwar	02	04	
Grand Total			**34**	**48**	

DADU

	Taluka Dadu	Taluka Johi	Taluka KN Shah	Taluka Mehar	Total
Tractor with Trolley	02	01	01	02	06
Tractor with Dozer blade	01	01	00	01	03
Refusal Van	04	01	01	03	09
Fire Brigade	02	01	01	01	05
Diesel Engine	05	02	05	00	12
Tractor Diesel Engine	04	01	00	-	05
Pumping Machines	04	01	00	01	06
Generator	03	-	-	-	03
Rikshaw	-	-	01	12	13

HYDERABAD

Status of Stock/ Dewatering Pumps / Machinery Availability in District Hyderabad

S#	MACHINERY/ EQUIPMENT	HMC (CITY/ LATIFABAD)	WASA	SIDA	AGRICULTURE	CMO QASIMABAD	CMO TANDO JAM	DISTRICT COUNCIL	W&S	PROVINCIAL	CIVIL DEFENCE	TOTAL
	(1)	(2)	(3)	(4)	(6)	(7)	(8)	(9)	(11)	(12)	(13)	(14)
1	Diesel Engine 30 HP	-	Yes	-	-	0		0	-	-	-	-
2	Diesel Engine 16 HP	28	-	-	-	41		0	-	-	-	-
3	Petrol Engine	10	-	-	-	116	5	15	-	-	-	-
4	Mud Pump	0	-	-	-		-	-	-	-	-	-
5	Hino Dutro	22	-	-	-		-	-	-	-	-	-
6	IVECO	1	-	-	-		-	-	-	-	-	-
7	New ISUZU FTR 0Cesspool/Lorry		-	-	-		-	-	-	-	-	-
8	New China Loader		-	-	-	0	1	-	-	-	-	-
9	New Master Lorry	02	-	-	-			-	-	-	-	-
10	Messy Tractor Sweep	-	Yes	-	-	-	-	-	-	-	-	-
11	Loader Komatsu	-	-	-	-	-		-	-	-	-	-
12	Belarus/ Tractor trolies	-	-	-	-	-	1	-	-	-	-	-
13	Bobcat Loader	-	-	-	-	-		-	-	-	-	-
14	New Excavator China	-	-	-	-	-		-	-	-	-	-
15	New Shawal Loader China	-	-	-	-	-		-	-	-	-	-
16	Skip Loader	-	-	-	-	-		-	-	-	-	-
17	Tractor Blade		Yes	-	-	-	1	-	-	-	-	-
18	New ISUZU NPR Garbage Vehicle	-	-	-	-	-	-	-	-	-	-	-

19	Loader Komatsu	-	-	-	-	-	-	-	-	-	-	-
20	Old Tractor Messy	01	-	-	-	-	1	-	-	-	-	-
21	Messy Tractor Sweep	-	-	-	-	-	-	-	-	-	-	-
22	Mazda (3500)	01	-	-	-	-	-	-	-	-	-	-
23	Cesspool Larry (Bedford)	-	-	-	-	-	-	-	-	-	-	-
24	Excavator	-	Yes		7		-	-	-	-	-	-
25	Bulldozer/Dozer	-	Yes		72	-	-	-	-	-	-	-
26	Jack Hammer with compressor	-	Yes	-	-	-	-	-	-	-	-	-
27	Dumper Vehicle	-	Yes	-	10	-	-	-	-	-	-	-
28	Master Loader	-	Yes	-	-	-		-	-	-	-	-
29	Vehicles	-	Yes	-	-	-	3	-	-	-	-	-
30	Hydraulic Crane	-	Yes	-	-	-	-	-	-	-	-	-
31	Water Bouzer with Sucking pumps	01	Yes	-	-	-	-	-	-	-	-	-
32	Trailer	-	-	-	2	-	-	-	-	-	-	-
33	Water Tanker	-	-	-	06	-	01	-	-	-	-	-
34	Refusal van	-	-	-	-	-	01	-	-	-	-	-
35	Fire Brigade	05	-	-	-	-	01	-	-	-	-	-
36	Chingchi	-	-	-	-	-	03	-	-	-	-	-
37	Generator	-	-	-	-	-	03	-	-	-	-	-
38	Grader	-	-	-	-	-	-	-	-	-	-	-
39	Road Roller	-	-	-	-	-	-	-	-	-	-	-

JAMSHORO

There are 99 tents provided by PDMA lying in the office of Mukhtiarkar Sehwan.

The following De-watering pumps/machine is available.

C.M.O, Kotri 08
T.M.A. Manjhand 05
T.M.A Sehwan 10
T.M.AT. B Khan 02

MATIARI

AVAILABILITY OF MACHINERY / EQUIPMENT

02 De-watering Machines and (14) watering machine fans are available in Deputy Commissioner Office Matiari

Machinery / equipment at taluka / TMAs

	Municipal Committee Hala	**Town Committee Matiari**	**Town Committee Khyber**	**Town Committee Oderolal Station**	**Town Committee Bhitshah**	**Town Committee Hala Old**	**Town Committee Saeedabad**
Water Tanker	03	-	-	-	01	-	-
Loaders	02 Loaders With 01 dozer	01 Loader 01 Master garbage	-	-	-	-	01
Refuse Van	01	-	-	-	-	-	-
Tractor Trolley	-	01 Tractor Trolly 01 tractor	-	-	01	-	01
Shehzor Pickup	-	-	-	-	-	-	01
De-watering machine	11 Machines 12 Water Pumps	01	04	09	02	03	01

TANDO ALLAHYAR

S#	**Taluka**	**Description**	**QTY**	**Available with Authority**	**Remarks**
		Petrol Engine 4" Radius	06		All Disposal Stations and water supply infrastructure has been handed over to PHED in compliance of orders of Water
		Motor at main Disposal Main Khad (standy)	05		
		Motor at MNA Scheme (standy)	02		
		Motor at Deh Naheki (standy)	02		

1	Tando Allahyar	Motor at Soomra colony disposal (standy)	02	MC Tando Allahyar	Commission. PHED Administration must visit all water schemes and disposals stations and make sure perfectness of infrastructure and no unpredicted situation may appear during monsoon season 2022
		Motor at Mirwah Disposal (standy)	02		
		Motor at Pir Colony Disposal (standy)	01		
		Motor at Bheel Colony Disposal (standy)	02		
		Motor at Main Road Disposal Station (standy)	02		
		Lift Machine Chamber Road	01		
		Motor at Zardari Colony Disposal (standy)	03		
		Motor at Naseer Canal Water Supply Scheme (standy)	04		
		Motor at Mirwah Road Water Supply Scheme (standy)	02		
		Installed Motor at Disposal Scheme No. 01 NoorShah Graveyard Motor 30 HP & Motor 15 HP Generator Available	02	TC Nasarpur	
		Installed Motor at Disposal Scheme No. 02 Oderolal Bus Stop Motor 20 HP Generator Available	01		
		De-Watering Pumps	02		
		Tanker	01		
		Fire Brigade	01		
		Tractor Trolley	01		
		De-Watering Machine 4" Dia with equipment	02	TC Sultanabad	Functional
		De-Watering Machine 3" Dia with equipment	01		
		Diesel Engine De-Watering Machines 8" Dia	01		

2	Jhando Mari	De Watering Machine 6" Dia with allequipment	01	TC Piyaro Lund	
		De Watering Machine 4" Dia with allequipment	03		
		De Watering Machine 3" Dia with all equipment	03		
		Water Tank	01		
		Fire Brigade	01		
		Refuse Van	01		
		Tractor Trolly	01		
		Hydraulic Tractor	01		
		Rickshaw Container	02		
3	Chamber	Diesel Engine 20 HP	01	Town Committee Chamber	Functional
		Tractor with Trolly	01		
		Stand by Generator 25kv	01		
		Petrol Engine 3*3	04	TC Sanjarchang	01 Working Condition 02 Working Condition 01 Working Condition Working Condition Working Condition
		Tractor with front loader	01		
		Garbage Lifting Motorcycle Loader	02		
		Diesel Engine 20HP	04		
		Fumigation Machine	02		
4		Fumigation Machine	32	District Council	
		Pump 4"x4" petrol Engine	26		
		Diesel Engine 30 HP 6"X6" Pump	26		
		Pump 3" *3" Petrol Engine	02		
		Pump 4" *4" Petrol Engine	25		
		Diesel Engine 30 HP 6"X6" Pump	04		
		Pump 12"X12" Diesel Engine	10		

TANDO MUHAMMAD KHAN

List of machinery/equipment

S#	NAME OF FUNCTIONAL MACHINE/EQUIPMENT	NUMBER
1	ULV (10 LITTER)	02
2	ULV (50 LITTER)	0
3	ULV (80 LITTER)	1
4	X-Ray Machine	5
5	Portable Machine X-Ray Machine	1
6	Ultrasound Machine	6
7	Gene-Xpert Machine	0
8	PCR MACHINE FOR HEPATITIS	0

SUJAWAL

Availability of Boats

TALUKA SUJAWAL		
S #	Name of Owner	**NO. OF SMALL BOATS / HORAA'S**
1	Ramzan Parai	**2**
2	Ismail Parai	**2**
3	Jumoon Parai	**1**
4	Qadoo Parai	**1**
5	Ghulam Hussain Parai	**1**
6	Wadero Alam Parai	**1**
7	Wahid Dino Parai	**1**
8	Kandero Parai	**1**
9	Wasayo Parai	**1**
10	Wadero Mehar Parai	**1**
11	Umer Parai	**2**
12	Ramoon Parai	**1**
13	Achar Parai	**1**
14	Ahmed Parai	**1**
15	Mamoon Parai	**1**
	Sub-total Sujawal	**18**
	TALUKA JATI	
1	Ayoob S/o Oad Thahmore	**1**

2	Abdullah S/o Gul Muhammad Thahmore	**1**
3	Abdul Ghani S/o Haji Waryo Thahmore	**1**
4	Qadir S/o Muhammad Qasim Thahmore	**1**
5	Haji S/o Shafi Thahmore	**1**
6	Ramzan S/o Bhinyadino Thahmore	**1**
7	Khan Muhammad S/o Yaqoub Thahmore	**1**
8	Muhammad Rafique S/o Hassan Thahmore	**1**
9	Muhammad S/o Haji Lalo Thaimore	**1**
10	Noor Muhammad S/o Peero Thahmore	**1**
11	Azim S/o Hassan Thahmore	**1**
12	Akhtar S/o Allah Rakhio Thahmore	**1**
13	Ishaque S/o Shadi Thahmore	**1**
14	Ismail S/o Shadi Thahmore	**1**
15	Hussain S/o Gul Muhammad Thahmore	**1**
16	Nawaz S/o Hashim Thahmore	**1**
17	Hassan S/o Qasim Thahmore	**1**
18	Ghulam S/o Sodho Thahmore	**1**
19	Hassan S/o Haroon Thahmore	**1**
20	Ramzan S/o Ahmed Thahmore	**1**
21	Soomar S/o Jumoon Thahmore	**1**
22	Jumoon S/o Umer Thahmore	**1**

23	Achar S/o Khamiso Thahmore	**1**
24	Nooro S/o Khamiso Thahmore	**1**
25	Hussain S/o Adam Thahmore	**1**
26	Haji S/o Yousif Thahmore	**1**
27	Ayoub S/o Meero Thahmore	**1**
28	Ramzan S/o Meero Thahmore	**1**
29	Suleman S/o Ahmed Thahmore	**1**
30	Abdul Razaque S/o Allah Dino Thahmore	**1**
31	Ismail S/o Ahmed Thahmore	**1**
32	Nawaz S/o Hashim Thahmore	**1**
33	Abdul Shakoor S/o Hashim Thahmore	**1**
34	Saleh S/o Jurio Thahmore	**1**
35	Allah Bachayo S/o Kairoo Thahmore	**1**
36	Abdul Ghani S/o Muhammad Amin Thahmore	**1**
37	Mir Muhammad S/o Shafi Thahmore	**1**
38	Lanoo S/o Gul muhammad Thahmore	**1**
39	Moosa S/o Haji Waryo Thahmore	**1**
40	Shabir Ahmed S/o Basrio Thahmore	**1**
41	Ishaque S/o Wali Muhammad Thahmore	**1**
42	Siddique S/o Muhammad Thahmore	**1**
43	Janoo S/o Hussain Thahmore	**1**
44	Amoon S/o Bhugio Thahmore	**1**
45	Hashim S/o Ahmed Thahmore	**1**
46	Abdul Sattar S/o Soomar Thahmore	**1**

47	Nawaz S/o Karimdino Thahmore	**1**
48	Mir Umer S/o Ramzan Thahmore	**1**
49	Muhammad Ali S/o Ayoub Thahmore	**1**
50	Siddique S/o Ibrahim Thahmore	**1**
51	Ilyas S/o Jaro Thahmore	**1**
52	Ali S/o Jhoki Thahmore	**1**
53	Hussain S/o Bachal Thahmore	**1**
54	Ali S/o Bachal Thahmore	**1**
55	Allah Rakhio S/o Yousif Thahmore	**1**
56	Aboo S/o Yousif Thahmore	**1**
57	Faizoo S/o Ishaque Thahmore	**1**
58	Juman S/o Abdullah	**1**
	Sub-total Jati	**58**
	TALUKA KHAROCHAN	
59	Haji Muhammad Katiar	**2**
60	Haji Jani Katiar	**4**
61	Ali Ahmed Katiar	**1**
62	Ishaque Solangi	**1**
63	Ahsan Mallah	**2**
64	Haji Ismail Katiar	**2**
65	Ahmed Khan Jat	**2**
	Sub-total Kharochan	**14**
	TALUKA HAHBUNDER	
1	Muhammad Ibrahim S/o Karim Jat	**1**
2	Ismail S/o Jumoon Mallah	**1**
3	Allah Bachayo S/o Merai Mallah	**1**
4	Ali Muhammad S/o Umar Mallah	**1**
5	Arab S/o Ali Muhammad Mallah	**1**
6	Haji Saloo S/o Juroo Samghan	**1**
7	Haji S/o Siddique Samghan	**1**
8	Haji Raboo S/o Haji Saloo Samghan	**1**
9	Guloo S/o Juroo Samghan	**1**
10	Merai S/o Saleh Muhammad	**1**
11	Haji Yousif S/o Haji Ali Muhammad Jat	**1**

12	Nakho Siddique Jat	**1**
	Sub-total Shahbunder	**12**
	Grand Total District	**102**

NAUSHAHRO FEROZE

S #	Name of Council	No. of Fire Brigades	No. of Tractor Trolleys	Water Pumping Machines	No. of Refusal Van	Water Tanker	No. of Rikshaw Loader	No. of Carry
1	MC Moro	2	04 Tractor- 03 Trolley	04 Moveable, 12 Fixed = Total 16	1	1	6	50
2	TC N.Feroze	2	01 Tractor- 01 Trolley	04 Moveable, 03 Fixed= Total 07	1	1	-	-
3	TC D.K Mari	-	01 Tractor- 01 Trolley	01 Moveable = Total 01	-	-	-	-
4	TC Padidan	1	-	02 Moveable, 03 Fixed =Total 05	-	-	-	-
5	TC Mithiani	-	-	03 Moveable =Total 03	-	-	3	-
6	TC Bhiria City	1	01 Tractor- 01 Trolley	02 Moveable = Total 02	-	-	-	-
7	TC Tharushah	-	01 Tractor- 01 Trolley	04 Moveable, 04 Fixed =Total 08	1	-	-	-
8	TC Bhiria Road	1	01 Tractor- 01	02 Moveable, 03 Fixed = Total 05	-	-	-	-

			Trolley					
9	TC Kandiaro	2	04 Tractor 03 Trolley	07 Moveable, 08 Fixed =Total 15	1	1	2	-
10	TC Halani	-	01 Tractor 01 Trolley	01 Moveable = Total 01	-	-	-	-
11	TC Mehrabpur	1	01 Tractor 01 Trolley	02 Moveable, 06 Fixed = Total 08	1	-	1	-
	Total	10	15 Tractor 13 Trollies	32 Moveable, 39 Fixed = Total 71	5	3	12	50

Transport

Bulldozers

05 Bulldozers available with office of Assistant Agriculture Engineer Sub-Division Moro of which 04 Bulldozers are working.

Fire Brigades

10 with MCs/TCs

SHAHEED BENAZIRABAD

a. Machinery and Equipment

Bulldozers available with Office of Assistant Agriculture Engineer, Sub-Division Shaheed Benazirabad

S #	Bulldozer No.	Name of Operator	Name of Zamindar	Location			Present Status
				Deh	Taluka	District	
1	ST 13-07 Shantui	Shamsudin	Shahbaz Dino	Toorioon	Saleh Pat	Sukkur	Idle for Fuel injection Pump defect

2	ST 16-21 Shantui	Sadique Ali	Mohammad Azam	MashakhOdho	Jam Nawaz Ali	Sanghar	Idle for truck chain roller teeth bush defect
3	ST 13-17-40	Luqman	Munawar Ali	Rind	KotDiji	Khairpur	Idle for generator defect & battery
4	ST 13-17-41	Naimatullah	Shan	Rahwari	Sinjhoro	Sanghar	Working
5	ST 13-18/64	Altaf Hussain	Sallahuddin	16-Dad	Nawabshah	Shaheed Benazirabad	Working
6	ST 13-18-65	Mohammad Saleem	Fahmeeda	29 Dad	Daur	Shaheed Benazirabad	Working
7	KM-17/49	Muhammad Illyas	Under repair @ Workshop Nawabshah Idle for general Over haling repair V /W. Order No 01-Dated 05-12-2017				
8	KM-17/51	Under repair W/Shop Nawabshah Idle for Final Drive defect Vide W /order No 04 dated 24-11-2013					
9	KM-17/52	Luqman	Under repair W/Shop Nawabshah Idle for Engine Block Burst Defect Vide W /order No: 09 dated 24-07-2014				
10	KM-17/53	-	Under repair W/Shop Nawabshah Idle for gear box defect Vide W /order No 06 dated 25-11-2013				
11	KM-17/54	Under repair @ Workshop Nawabshah Idle for general Over haling repair V /W. Order No 04-Dated 05-12-2017					
12	KM-17/55	Under repair. Main work shop Khairpur V/ W O /No 88 Dated 3-9-2001 Idle for Engine and Chassis Defect.					
13	D 95- B NH -31	Guhram Jatoi	Vide Work Order No: 01 Dated 01-01-2020 Idle for Engine and Chassis repair at Assistant Agricultural Engineering Workshop Nawabshah District Shaheed Benazirabad.				
14	D 95- B NH 32	Altaf Hussain	Under repair W/Shop Nawabshah Idle for Truck chain with sprocket wheel defect Vide W /order No: 03 dated 16-10-2018				

a. <u>Dewatering of Stagnant Water</u>

For the dewatering of stagnant water, the District Govt. immediately purchased **11 Dewatering Pumps** using own resources.

Available Dewatering Pumps (All Sources)

S#	Location	District Government (Defunct)	M.C / Town Committee	PDMA
1	Nawabshah	30 (Pumps Diesel)	15 Functional	06 (30 HP Diesel)
		05 (Electric)	12 Non-Functional	02 (05 HP Petrol)
2	Daur	00	09	0
3	Sakrand	00	09	0
4	Kazi Ahmed	00	12	0
		00		0
	Total	**35**	**57**	**08**

SANGHAR

Available Resources

De-watering pumps	65	available with MCs/TCs
De-watering pumps	09	available at warehouse Sanghar
Der-watering pumps	12	available with XEN, PHED Sanghar
Total	**86**	

S#	Taluka	ITEM	AVAILABILITY
1	Sanghar	De-Watering pump (diesel)	06
		Disposal (Electric machines)	07
		Tractors	02
		Trolleys	02
		Fire Brigade	02
		Fumigation Machine	02
		Refusal van	01
2	Shahdadpur	Dewatering pumps	10
		Fire Brigade	02
		Tractors	04
		Trolleys	02
		Water Bouzer	01
3	Khipro	Dewatering pumps (Diesel)	08
		Tractors	02
		Trolley	01
		Refusal Van	01
		Fire Brigade	01
4	Sinjhoro	Dewatering pumps (Diesel)	06
		Disposal (Electric machines)	02
		Mono Block	06
		Tractors	02
		Trolley	01

		Refusal Van	01
5	Tando Adam	Dewatering pumps (Diesel)	08
		Dewatering pumps (Electric)	10
		Pump (Petrol)	05
		Tractors	03
		Trolley	02
		Refusal Van	01
		Fire Brigade	02
		Generator	02
6	Jam Nawaz Ali	Diesel Engine	05
		Petrol Engine	03
		Eclectic Machine	05
		Tractor	03
		Trolley	01
		Refusal Van	01

GHOTKI

Availability of Vehicle

01	H.H Hino Trailor GS-4214 Under repair
02	Mazda (T-3500) GS-7035 In working condition

S#	Name of Department	No of vehicles
1	Revenue Department	4 Jeeps
2	Local Govt. Department	07 Cultus, 3 Jeeps & 01 Motorcycle)
3	W & S Department	3 Jeeps & 1 Car
4	Agriculture Department	1 Jeeps
5	Health Department	03 Cultus, 01 Single Cabin, 01 Hiace Samurai 01 and 02 Jeep
6	Education Department	01 Cultus Car

Mobile Machinery

1. Diesel Engine 12 Horse Power.
2. Electric Motor 10 Horse Power.
3. Electric Motor 2 Horse Power.
4. Rooter 1 Horse Power.

State of preparedness of equipment

Highways Division Ghotki

- Road Rollers 20
- Jeeps 02

Boats

Taluka	No. of Boats	Name of Boat owners
Ghotki	10	1. Haque Nawaz s/o Muhammad Chhutal Chachar
		2. Abid Hussain s/o Abdul Karim Chachar
		3. Shaukat Ali s/o Hakim Chachar
		4. Ali Sher s/o Qadir Bux Chachar
		5. Ali Sher s/o Wazir Mirbahar
		6. Ghulam Nabi s/o Minhoon Mirbahar.
		7. Shahmeer S/o Ghulam Nabi Mirani
		8. Wahid Bux s/o Karim Bux Mirbahar
		9. Ghulam Rasool s/o Minhoon Mirbahar.
		10. Nawab s/o Waryam Mirbahar
		11. Ghulam Farid s/o Allah Wadhayo Mirbahar
Ubauro	03	1. Ghulam Hussain s/o Sultan Machhi
		2. Muhammad Hussasin s/o Sher Muhammad
		3. Muhammad Usman s/o Wahid Bux Machhi

Note: Out of (10) Boats in Taluka Ghotki (04) shown at Sr. No. 1 to 4 are Motor Boats, while all (03) Boats in Taluka Ubauro are Motor Boats.

Municipal Committee Mirpur Mathelo

- De-Watering Pumps 04
- Electric Motors 04
- Diesel Motor Engine 02
- Diesel (Mobile Engine) 02
- Water Pump Fan 01
- Mazda 01
- Loader Tractor 01
- Tractor Trolley 01
- Fire Brigade 01
- Chief Sanitary Inspector 01
- Cultus Car 02
- Motorcycle 03
- Sanitary Inspector 01
- Sanitary Jamandar 02

- Sanitary Workers 72

Municipal Committee Ghotki

- De-Watering Pumps 06
- Fire Brigades 02
- Generators 02
- Tractor Loader 02
- Tractor Trolley 01
- Tractors 01
- Diesel (Mobile Engine) 03
- Loader Tractor 01
- Mazda 01
- Cultus Car 02
- Sanitation officer 01
- Sanitary Inspector 08
- Sanitary Worker (Contr) 112
- Sanitary Workers 32

Town Committee Daharki

- De-Watering Pumps 09
- Lifter Vehicle 01
- Tractor Loader 01
- Fire Brigade 01
- Diesel (Mobile Engine) 03
- Cultus Car 01
- Diesel Motor Engine 09

Town Committee Ubauro

- De-Watering Pumps 05
- Lifter Vehicle 01
- Fire Brigade 01
- Tractor Trolley 01
- Tractor Loader 01
- Diesel (Mobile Engine) 01
- Dumber 01
- Cultus Car 01
- Motorcycle 01

Town Committee Khangarh

- De-Watering Pumps 02
- Electric Motors 10
- Diesel (Mobile Engine) 02
- Water Pump Fan 02
- Mazda 01
- Tractor Loader 01
- Tractor Trolley 01
- Fire Brigade 01

KHAIRPUR

S#	Name of MC / TC	Dumper	Excavator	Bulldozer	Loader	Cranes	Carriage van	Fire brigade	Water bowser	Water tanker	Heavy generator	Vehicle for	De-watering Machine	Sucker Machine	Chingchi	Tractor /Trolley
1	Khairpur	6	1	0	9	1	1	6	0	0	0	4	0	2	33	7
2	Kingri	0	0	0	0	0	0	2	0	1	0	1	1	0	2	0
3	Gambat	1	0	0	0	0	0	3	0	1	0	0	0	1	14	2
4	Sobhodero	0	0	0	0	0	0	1	2	2	0	3	2	0	3	4
5	Kotdiji	1	0	0	0	0	0	1	0	0	0	1	0	0	4	1
6	Nara	0	0	0	1	0	0	2	0	0	0	2	0	0	2	5
7	Mirwah	0	0	0	0	0	0	1	0	0	0	1	0	0	2	2
8	Faiz Ganj	1	0	0	0	0	0	1	0	1	0	1	0	0	0	1
	TOTAL	**9**	**1**	**0**	**10**	**1**	**1**	**17**	**2**	**5**	**0**	**13**	**3**	**3**	**60**	**22**

SUKKUR

S#	Department	Resources	Quality/Quantity	Status
1	Sukkur Municipal Corporation	Manpower	1749	Functional
		Fire Brigade	10	Functional
		Excavator	01	Functional
		Loader	04	Functional
		Tractor	09	Functional
		Trolley	09	Functional
		Sucker Machine	02	Functional
2	Municipal Committee Rohri	Messy Tractor Trolley	01	Running Position
		Bekarus Tractor with Blade	01	Running Position
		Hino Sanitation	01	Running Position
		Chingchi Rikhshaw	02	Running Position
		Bike Rukhshaw	01	Running Position
		Suzuki Sanitation	01	Running Position
		Steel Loader	02	Running Position

		Loader 385	02	Running Position
		Excavator (Black Loader)	01	Running Position
		Messy Tractor Trolley 240	04	Running Position
		Fire Brigade	01	Running Position
		Water Baoser	01	Running Position
3	Town Committee Pano Akil	Tractors	04	On Road
		Trolleys	02	02 on road /01 off road
		De-Watering Pumps	01	Functional
		Fire Brigade	03	02 on road / 01 off road
		Electric Mazda	01	On road
		Loader	01	On road
4	Town Committee Bagarji	Tractor Trolly	01	Running Position
		De-Watering Machine	02	01 Running Position / 01 Non Working
		Spray Machine Plastic	02	Running Position
		Spray Machine Oil	01	Running Position
5	Town Committee Kandhra	Tractor	01	On road
		Trolleys	01	On road
		De-Watering Pumps / Diesel Engine (already working)	01	Working Condition
		Motor Cycle	01	On road
		Chingchi Rikhshaw	02	On road
		Spray Machine (Small Size)	01	Working Condition
		Water Tank	01	On road
6	Town Committee Salehpat	Fire Brigades	02	01 Working / 01 NonWorking

		Tractors/Loader	03	On Road
		Trolleys	02	On Road
		De-Watering Pumps/ Diesel Engine	02	Working condition
		Pick Up Vans	01	On Road
		Fumigation Machine for Mosquito Spray	01	Functional
		Chingchi Rikhshaw	01	On Road
7	Works & Services Department	Vehicles	05	
		Earth Levelers	01	Functional
8	Irrigation Department	Valvo Hydraulic	10	Functional
		Excavator	05	Functional
		Samsung Hydraulic	06	Functional
		Dozer	01	Functional
		Dredger	01	Functional
		Tailor	01	Functional
		Oil Tander	01	Functional

JACOBABAD

Details of vehicles and dewatering pumps at public health division Jacobabad

S#	Description of Machine & Equipment	Qty No.		Strength/Capacity
1	4x4 vehicles	04		1000/800 cc
2	Dewatering Pumps	03		2”x2.5”
3	Human Resources PHE		185 Employees	

KASHMORE

AVAILABLE RESOURCES

S#	MACHINERY EQUIPMENTS / RELIEF MATERIAL	NO. OF QUANTITY
1	Tractors	11 (M.C/TMAs)
2	Trolley	03 (M.C/TMAs)
3	Loader Tractor	01 (M.C Kandhkot)

4	Tractor (With front Dozer)	02 (M.C/TMAs)
5	Refuse Carrier Van	02 (M.C/TMAs)
6	Fire Brigade Lorry	04 (M.C/TMAs)
7	Bulldozers / Dozer	06 (Agriculture Workshop)
8	Road Roller	04 (Kandhkot/Kashmore)
9	Dewatering Pumps	15 (D.C office / M.C/TMA's)
10	Sucking Machine	01 (M.C Kandhkot)
11	Aqua Box	20
12	Fiber Motor Boat (Received from PDMA)	01

LARKANA

Details of Machinery by Highway Division Larkana

S#	Material	Nos
1	Motor Grader	01
2	Water Tank	02
3	Road Roller	10

Details of Machinery by PHE Department

S#	Material	Nos.	RFT
01	Diesel Oil Engine 12 BHP	20	-
02	De-Watering Pump (Single Phase)	20	-
03	Suction Pipe / Hose Pipe	-	400
04	Delivery Pipe	-	2000
05	Foot Valve	20	-
06	SluceValve	20	
07	Bend	20	
08	Clamps	40	

Details of Machinery by Town Committee Ratodero

S#	Material	Nos
01	Tractor along with Trolleys	04
02	Dozer	01
03	Isuzu Truck	01
04	Mazda	01
05	Qingquies	03
06	Dewatering Machines	03
07	Loader	04
08	Refuse Van	01
09	Diesel Machine	01

10	Petrol Machine	01

Details of Machinery by Town Committee Naudero

S#	Material	Nos
1	Fire Bridage Lorry	01
2	Dewatering Motors	02
3	Tractor Trolly	05
4	Tractor Dozer	01
5	Dumper Truck	01

Details of Machinery by Town Committee Badah

S#	Material	Nos
01	Dewatering Machines	02
02	Tractor with Trolley	02
03	Fire Brigade	01
04	Qingqi	04

Details of Machinery by Town Committee Arija

S#	Material	Nos
01	Dewatering Machine	03
02	Tractor with Trolley	02
03	Refuse van	01

Details of Machinery by Town Committee Garello

S#	Material	Nos
01	Dewatering Machine	02
02	Tractor with Trolley	02
03	Dozer	01

Details of Machinery by Agriculture Extension, Larkana

S#	Material	Nos
01	One Unit Single Cabin Toyota Hilus	01
02	Tractor Mounted Sprayers	02
03	Vehicle Mounted Sprayers	06
04	Solo Power Sprayers	46
05	Chargeable Sprayers	202
06	Mist Blowers	20
07	Pesticide	740 litters

KAMBER SHAHDADKOT

Civil Defense – its Strength, Capacity, and resource

Taluka	No. of Ambulances		No. of Fire Brigades		
	Total	On Road	Total	On Road	Off Road

Kamber	4	4	2	2	0
Shahdadkot	2	2	3	2	1
Mirokhan	1	1	1	1	0
Qubo Saeed Khan	1	1	1	1	0
Sijawal Junejo	0	0	1	1	0
Warah	2	2	1	1	0
Nasirabad	1	1	1	1	0
Grand Total	**11**	**11**	**10**	**9**	**1**

State of relief stocks, heavy machinery, dewatering pumps available in District (TMAs & MCs)

Taluka/UC/ TC	Petrol Generators	Bulldozers / Dozer	Refuse Van	Water Bowser (Tanks)	De-Watering Machines	Fire Engine / Tender	Tractors Trolleys	Front Loader
Kamber	2	0	1	3	7	2	4	1
Shahdadkot	4	2	1	1	6	3	6	2
Nasirabad	3	1	1	1	3	1	1	1
Qubo Saeed Khan	2	1	1	1	2	1	2	1
Mirokhan	0	1	1	0	2	1	2	1
Sijawal Junejo	0	1	1	1	1	1	1	0
Warah	2	0	1	2	3	1	3	1
Behram	0	0	0	0	0	0	0	0
Wagan	0	0	0	0	2	0	0	0
Gaji Khuhawar	0	0	0	0	0	0	0	0
Total	**13**	**6**	**7**	**9**	**26**	**10**	**19**	**7**

S#	City/Town	Total No. of Disposals	No. of Functional Disposals	No. of Non-Functional Disposals	No. of Generators Available
01.	Kamber	18	18	-	05 Generators (100 KVA)
02.	Shahdadkot	09	09	-	02 Generators (100 KVA)
03.	Warah	02	02	-	-
04.	Nasirabad	03	03	-	-
05.	Mirokhan	02	02	-	-
06.	Sijawal Junejo	01	01	-	-
07.	Qubo Saeed Khan	03	03	-	-
08.	Waggan	01	01	-	-
09.	Arzi Bhutto	01	01	-	-

Details of relief items received and distributed districts kamber shahdadkot

Relief Items	Balance
Tents	300
Mosquito nets	900
Tarpaulin Sheets	200
Kitchen	176
Wooden Pallet	11
Folding Beds	7
Ever lota	30
Water blader	4
Rubber shoes	20
Bucket with mug	48
Sleeping Mat	28
Steel Bucket	2
Ever Steel	30
Bucket (UNHCR)	130
Solar lamp (UNHCR)	800
Jerry cane(UNHCR)	261
Blankets	910
Water filtration hand pump	6

SHIKARPUR

Machineries are available at Town Committees

Name of Town Committee	Dewatering	Mazda	Qingqi	Fire brigade	Jeep	Loader rickshaw	dozers	Tractors
Madeji	3	-	-	-	1	-	1	3
Rustam	1	-	-	-	-	2	-	-
G.Yasin	2	1	1	1	-	-	-	2
Chak	-	-	-	-	-	2	-	-
Khanpur	2	1	-	1	-	-	1	2
Lakhi	-	1	-	1	-	1	1	1

Bulldozers are available in Agriculture Engineering (F) Shikarpur

Bulldozers in working	Troller	Bulldozers out of order
04	01	01

MIRPURKHAS

Following stock of heavy machinery is available in Distrcit Mirpurkhas

Town Committee Digri:

Router 4 Inch Diameter (Petrol)	05
Router 3-inch Diameter (Petrol)	05
Router 2 Inch Diameter (Electric)	02
Dewatering Machine 5 Inch Diameter (Diesel)	01
Dewatering Machine 6 Inch Diameter (Diesel)	04
Tractor Dewatering Fan 8 Inch	01
Arranged Water Bowser	02
T.C Own Water Bowser	01
Fire Brigade Vehicles	02
Garbage Disposal Van	01
Garbage Collection Chingchi (Rikhshaw)	02
Tractors	03
Tractor Loader	01
Fumigation Machines	01

TOWN COMMITTEE TANDO JAN MUHAMMAD

Router 3-inch Diameter (Petrol)	03
Router 2 Inch Diameter (Electric)	02
Dewatering Machine 16 HP (Diesel)	03
Water Tanker (Bowser)	02
Fire Brigade Vehicles	01
Garbage e Disposal (Rikshaw)	01
Tractors	02
Fumigation Machines	01

Town Committee Jhuddo:
Details of Vehicles:

Fire Brigade Van (Master)	01 Functional
Tractor / Bulldozer 4x4	01 T.C Naukot custady since 5 years
Refuse Van (Master)	01 Functional
Potohar Jeep (GL-2111)	01 T.C Naukot custady since 5 yrs
Core Care (GL-0220)	01 Functional
Motor Cycle	01 Non-Functional
Tractor Trolly old Messay 240	01 T.C Naukot custady since 5 yrs
Tractor Trolly New	01 Functional

Details of Machines:

Diesel Engine for Dewatering 8" Dia 16 HP (Moveable)	04
Petrol Engine 3" Dia 6.5HP for Dewatering (Moveable)	04
Diesel Engine Pump 48 HP	00 Required 04 Nos.
Diesel Pump 6" Dia	02 Required 04 Nos.
Router 4" Dia	04 Required 04 Nos.
Fumigation Machine	02, 01 Functional / 01 Non-Functional
	01 Required.

Town Committee Naukot:
Details of Available Machinery & Vehicles:

Dewatering Pumping Machine 4" Dia	01 Functional
Dewatering Pumping Machine 3" Dia	01 Functional
Tractor with Trolly messey 240	01 Functional
4 Wheel Tractor Loader	01 Functional
Fire Brigade	01 Functional
Chingchi Rikhshaw Loader	01 Functional

Fumigation Machine	01 Functional

Town Committee Kot Ghulam Muhammad:
Machinery:

Diesel Engine 20 HP with pump (8x8)	02 Working Condition Require 02 Nos Diesel Engine with Sanction Pipe Complete Sets.
Petrol Router (4x4)	02 Not Working Require 04 Nos. Complete Sets
Petrol Router (3x3)	01 Working Condition Require 03 Nos. Complete Sets
Delivery Pipe	Nil Require 200 Ft. 8x8 & 4x4, 1000 Ft.
Sanction Pipe	Nil Require 01 Nos. 6x6 Complete & 02 Nos. 8x8 complete.
Fan 6x6 1" Ft. Dia	01 Working Condition Require Sanction/Delivery Pipe Complete Sets.

Vehicles:

Tractor (Russian)	02	01 Working and 01 Not Working Require 01 No.
Massy Tractor with Kachra Trolly		01 Working Condition Require 01 No.
Loader Tractor	01	Not Working, Require 01 No.
Sulage Water Tanker Hodi Tanker No.	01	Working Condition, Require 01
Water Tanker for Drinking Water Working.	03	02 Nos. Working & 01 Not
Fire Brigade (Mini) No.	01	Working Condition, Require 01
Fire Brigade (Big)	01	Not Working
Fog Machine Spray Nos.	01	Working Condition, Require 03
Refuse Van	01	Not Working, Require 02 Nos.

MACHINERY AVAILABLE WITH DISTRICT ADMINISTRATION MIRPURKHAS.

- De-watering Pump	40
- Electric Motors	17
- Tractor Trolley	16
- Fire Vehicles / Bowzer	07

THARPARKAR

- Tractor 05
- Refuse Rikhshaw Chingchi 16

S#	Taluka	MC/TC	Fire Bridge vehicle	Water Tanker	Tractor Trolley	De-watering pumps	Shelters available
1	Mithi	MC Mithi	2	1	4	5	-
2		TC Chelhar	1	1	-	1	-
3	Islamkot	TC Islamkot	1	1	3	12	-
4	Diplo	TC Diplo	1	1	2	2	-
5	Chachro	TC Chachro	2	1	1	3	-
6	Dahli	TC Kheme Jo Par	1	-	1	-	-
7	Nagarparkar	TC Nagarparkar	2	2	4	3	-
8	Kaloi	-	-	-	-	-	-
	Total		**10**	**7**	**15**	**26**	-

UMERKOT

Relief and Rehabilitation Items available with DDMA		
S#	**ITEMS**	**QYT**
1	Tents	1403
2	Shelter School Tents	51
3	Ration Bags	0
4	Tarpaulin Sheets	8106
5	Mosquito Nets (Human)	31415
6	Mosquito Nets (Animal)	3411
7	Blankets	0
8	Jerry Cans	260
9	Sleeping Sheets	760
10	Dewatering Pumps Ground Standing	65
11	Small Dewatering Pumps	6
12	Transformer 100 KV	0
13	Pillows	124
14	Pillow Cover	63
15	Portable Toilet	40
16	Portable Table	8
17	Portable Washroom	3
18	Portable Chair	50
19	Plastic Chair	14
20	Folding cupboards	42

21	Bed Side Screen	26
22	Bio-Hazard	2
23	Examine Tab	1
24	Linen Bag Trolley	1
25	Drip Stand	6
26	Dustbin 5-L	59
27	Dustbin 12-1	2
28	Gloves	5
29	Sanitizer 1-L	1
30	Sanitizer 100ML	37
31	Surgical Mask	288

Resources Available with Local Councils

S #	Taluka	Fire Brigade Vehicle	Water Tanker with MC/TC	Tractor Trolley with MC/TC	De-Watering Pumps with Local Councils	De-Watering Pumps with DDMA	Generator for Office Use	Tents Available with DDMA	Motor Boat Available with DDMA
1	Umerkot	04	02	09	02	19	01	400	02
2	Samaro	02	01	01	02	00	01	0	0
3	Kundri	02	02	03	04	00	01	0	0
4	Pithoro	02	02	02	04	00	02	0	0
	Total	**10**	**07**	**15**	**12**	**19**	**05**	**400**	**02**

Appendix-3: Details of Low-Lying Areas

S#	District	Location	Geographical Location
1	District West	4K Chowrangi	25.0063948, 67.0644031
		Aligarh Colony	24.9358538, 67.0129493
		Baba More	25.0058639, 67.0537904
		Bukhari Colony	24.9360474, 67.0163002
		Karimi Chowrangi	25.0118963, 67.0640878
		Khuda Ki Basti	25.0325221, 67.0956092
		Khuwaja Ghareeb Nawaz	24.9691647, 67.0696141
		Muhammad Nagar, Sec 11	24.9412934, 66.9969608
		Sector 11 1/2, Orangi Town	24.9574728, 66.9828432
		Sector 12/L	24.9470095, 67.0138372
		Sector 12-C	24.9418113, 66.9548688
		Sector 4 A	25.0220959, 67.0658209
		Sector 4 B	25.014182, 67.0687997
		Sector 4-B	25.0156631, 67.0690723
		Sector 7 B	24.9428985, 67.0110876
		Surjani Town "Power House" Chowrangi	25.0252755, 67.0632657
		Thorani Goth	24.9516672, 66.9947271
		Yousuf Goth	25.0090667, 67.0717785

2	Karachi Central	Abdul Shakoor Chona Depo	24.900722, 67.037332
		Ayesha Manzil Chowrangi	24.927333, 67.064578
		Cafe Piyala	24.945789, 67.067785
		Gujar Nala	24.93483, 67.056711
		Haji Mureed Goth	24.896087, 67.035289
		KDA Chowrangi Bus Stop	24.931101, 67.037947
		Khameeso Goth / Ali Ibrahim Goth UC-9	25.005047, 67.08881
		Lyari Nala	24.9377, 66.949092
		Mandi at Cafe Piyala	24.945059, 67.068008
		Moosa Colony in Front of Sambroz Hospital	24.920808, 67.051076
		Mujahid Colony	24.920532, 67.037151
		Allah Wali near Nadi	24.928467, 67.051814
		Nadeem Arcade	24.962403, 67.063506
		Orangi Nala	24.891381, 67.024449
		Paposh Market & Chandni Chowk	24.921583, 67.021337
		Power House Chowrangi	24.984032, 67.066131
		Paposh Vegetable-Fruit Market	24.921487, 67.020991
		Samanabad Market Gulberg	24.942409, 67.071275
		Shamim Pump between Block 8 & 9	24.917969, 67.073617
		UC-3 Fatima Jinnah Colony	24.967531, 67.076796

		Up More Main Stop Nala Sector 11-I	24.9728, 67.066754
		Water Pump Chowrangi	24.936822, 67.075996
3	Karachi East	Area Opposite to Agha Khan & Liaquat National Hospital	24.890254, 67.070982
		Baran Goth	24.885619, 67.032318
		Bilawal Shah Noorani Goth	24.948076, 67.133963
		Central Jacob Lines	24.867714, 67.038674
		Essa Nagri	24.901724, 67.065821
		Govt Boys School Azeem Khan Gabol Goth Gulshan E Iqbal	24.93705, 67.096545
		Guru mandir near Sabil Wali Masjid	24.879373, 67.038855
		Hansa Cooperative Housing Society Limited	24.955493, 67.163291
		Hasan Square	24.90099, 67.073148
		Jehangir Road	24.886554, 67.041385
		Jutland Lines	24.864906, 67.039385
		Karachi Administration Employees Housing Society - KAECHS	24.862129, 67.080715
		Kashmir Colony	24.839826, 67.076991
		KESC Society	24.943196, 67.160392
		Khudadad Colony	24.872753, 67.046524
		Martin Quarters	24.890766, 67.04482
		Mehmoodabad Number 6 Bus Stop	24.857814, 67.083139
		National Stadium Karachi	24.892193, 67.081986

		New Town Police Station	24.888888, 67.060613
		Nipa Chowrangi Bus Stop	24.917857, 67.09707
		Nishtar Road	24.885393, 67.030507
		Rim Jhim Towers	24.940353, 67.160379
		Saadat e Amroha Society	24.962892, 67.166488
		Sunlay Society	24.941231, 67.154603
		Saadi Town	24.966631, 67.173063
		Sachal Goth	24.951506, 67.131356
		Shahabuddin Market	24.865516, 67.036127
		Soldier Bazaar	24.87683, 67.033055
		Soomra Society	24.96133, 67.161892
		Union Committee Office (UC1 Jamshed Town)	24.839338, 67.074905
		15 Hub Chowki Rd	24.943319, 66.93397
		bhit shah	24.817625, 66.963432
		Football Ground	24.921737, 66.926492
		Golimar	24.885391, 67.015935
		Gul Bai Chowrangi	24.875648, 66.967449
		Gulshan Ghazi Graveyard	24.941807, 66.971572
		Jahanabad	24.885232, 67.000663
		Katchi Para	24.823906, 66.992276

4	Karachi Keamari	Machar Colony	24.862724, 66.979837
		Metroville	24.909166, 66.995078
		Mianwali Colony	24.880961, 67.008854
		Moach Goth	24.921109, 66.9437
		Moulvi Tamizuddin Khan Road	24.844784, 66.999648
		Noorani Ground	24.912475, 66.966969
		Pak Colony	24.900289, 67.013694
		Police Training Center, Saeedabad, Baldia Town, Karachi West, Karachi, Sindh, Pakistan.	24.921784, 66.957192
		Sindh Baluchistan Hotel	24.818759, 66.975886
		Nagina Center	24.829497, 66.982463
		Qasba Colony	24.942563, 67.024119
		Sher Shah Colony	24.883591, 66.988376
		Sikandarabad	24.90349, 67.057257
		Seaman Hostel	24.824564, 66.979358
		Gaib Shah Mazar	24.823298, 66.977774
		Sultanabad	24.839838, 67.018534
		Sadullah Goth	24.956222, 66.944105
		Yusuf Goth	24.956024, 66.934765
		KDLB Office	24.849098, 66.990087

		Jungle Shah College	24.824808, 66.9806947
		Jungle Shah Mazar	24.823698, 66.981929
		KMC Compound	24.88135, 67.045651
		Toheed Masjid	24.865126, 67.003302
		Farooq-e-Azam Masjid	24.824315, 66.98433
		Nagina Center	24.829677, 66.98249
		Habib Bank	24.823633, 66.981907
		Pathan Masjid	24.978358, 66.88912
		Shareef Clinic	24.855051, 67.06695
		Quba Masjid	24.862015, 67.000689
		Tajbar Shop	24.859145, 67.00095
		Qasim Shah House	24.92745, 66.938687
		Chahchi Hotel	24.823445, 66.994731
		Minar Masjid	24.903, 67.054736
		Mubarak Masjid	24.89458, 67.047011
		KPT Ground	24.821429, 66.986874
		Jadoon House	24.823843, 66.995553
		Al-Felah Masjid	24.925677, 67.008774
		Massan Chowk	24.820772, 66.994929
		Usman Ghani Masjid	24.87521, 66.954353

		Bilal Masjid Nallah	24.865191, 66.980521
		Saeedia Masjid Nallah	24.826157, 66.994597
		Haji Camp	24.839732, 67.015144
		NLC head quarter gate	24.818772, 66.974275
		Mai Kalachi Road	24.836542, 67.013683
		500 Quarters	24.888638, 66.89725
		KANUPP	24.853705, 66.774148
		Dilfulabad Culvert	24.872672, 66.918695
		Telephone Exchange	24.86642, 66.917761
		Urdu Bazar	24.882779, 66.985621
		Shaheen Hotel	24.86046, 67.000813
		Muhammadi Road	24.880855, 66.986516
		Akbar Road	24.877449, 66.983513
		Iqbal road wali pullia	24.926721, 66.967777
		Graveyard Baldia Town	24.915428, 66.971024
		Awami Street	24.917631, 66.969556
		Bukhari Masjid wali pulia	24.95276, 66.948682
		PSO Rasheedabad 20. No Bus Stop	24.819254, 66.99511
		Gulshane-E-Ghazi Chowk Masjid	24.931042, 66.970706
		Jeddah Hazara Colony Jumma Bazzar Culvert	24.929876, 66.965571

		Gousia Masjid Culvert	24.912675, 66.93833
		PSO Pump Moach More	24.924095, 66.946002
		Raja Tanveer Colony Culvert	24.977795, 66.94653
		Hassan Goth Culvert	25.02869, 67.092076
		Dawood Goth Culvert	24.950149, 66.945929
		Sajjan Goth Culvert	24.926273, 66.95279
		Pakora Chowk Culvert	24.940906, 66.963166
		Qazi Hospital Culvert	24.939035, 66.958928
		Kabari Chowk Culvert	24.93851, 66.958799
		19-D Bus Stop	24.954764, 66.949855
		Quetta Hotel Jungle School Road	24.924263, 66.969075
		Stadium Chowk	24.929348, 66.959183
		Police Complex	24.921247, 66.957052
5	Karachi Malir	Shell Petrol Pump to Airport Turning	24.887195, 67.163336
		Falak Naz to Airport Nallah	24.886763, 67.14587
		Dawood Chowrangi Nallah	24.850399, 67.20724
		Juvenile Prison Malir District (Bacha Jail)	24.853222, 67.253963
6	Karachi South	Amir Khusro Park	24.814265, 67.030361
		Arts Council of Pakistan Karachi	24.852986, 67.02165
		Bakhtawar Tower	24.811918, 67.011608

		Bilawal Chorangi	24.81557, 67.020488
		Clifton Bridge	24.843839, 67.032219
		Consulate General of Japan in Karachi	24.845425, 67.032263
		Doctor Ziauddin Ahmed Road	24.844196, 67.028233
		Ghulam Hussain Qasim Rd	24.874646, 67.016454
		Glass Tower Street	24.835719, 67.033317
		Haroonabad	24.893531, 66.993588
		Hijrat Colony Nallah	24.835308, 67.020906
		Hyperstar	24.802781, 67.03059
		Jillani Centre	24.848653, 66.996693
		Jubilee Chowk	24.865022, 67.018566
		Kalri Rd Nallah	24.857074, 66.99607
		Karachi Club	24.84354, 67.028954
		Karachi Metropolitan Corporation Building	24.854638, 67.007177
		Kutiyana Memon Hospital	24.852173, 66.993296
		Metropole hotel	24.850634, 67.029656
		Metropole Roundabout	24.84661, 67.02496
		MPA Hostel	24.856103, 67.024273
		Nabi Bux & Garden Police Station	24.86955, 67.01729
		Nehr-e-Khayyam Nallah	24.825343, 67.03496

		PC Hotel	24.84722, 67.026288
		Pitchar Nallah	24.855194, 66.996427
		Provincial Assembly of Sindh	24.854429, 67.020151
		Railway Colony	24.84535, 67.04832
		Shahrah-e-Attar	24.80431, 67.028321
		Shahrah-e-Liaquat	24.854512, 67.010913
		Siddiq Wahab Road	24.862532, 67.002335
		Sindh Secretariat Nallah	24.85385, 67.016852
		Spencer Eye Hospital	24.863869, 67.002371
		Urdu Bazar Karachi	24.858866, 67.017537
7	Korangi	3 Main Korangi Rd	24.833998, 67.100131
		Chakra Goth	24.817609, 67.128459
		College Of Business Management	24.812844, 67.117468
		Gulshan e Sikandar	24.815697, 67.119485
		Korangi 1 1/2	24.823532, 67.137731
		Korangi GPO	24.839918, 67.143365
		RCD Ground Road	24.899517, 67.197212
		Shah Faisal Colony 2	24.88071, 67.149402
		Shan Chorangi Bus Stop	24.838764, 67.120795
		Singer Puliya (Culvert)	24.842666, 67.161019

		Vita Chorangi Bus Stop	24.841327, 67.133717
		Zaman Town	24.831622, 67.152209
8	Hyderabad	Abdullah Town	25.403835, 68.338026
		Ahsanabad Colony	25.403957, 68.383421
		Al Shahbaz Colony Kachi Abadi	25.397114, 68.329713
		Allah Bachayo Shoro	25.323806, 68.330485
		Apwa Girls High School - Latifabad No 8	25.366868, 68.362612
		Baban Shah Colony - Latifabad No.1	25.379094, 68.34089
		Bachal Solangi Goth Halanaka	25.419873, 68.378271
		Bangali Colony - Latifabad No 1	25.377676, 68.341753
		B-Block Latifabad No. 9	25.36171, 68.352725
		Bhitai Town Road	25.419722, 68.340778
		Bhittai Nagar	25.421521, 68.343243
		Bilal Jama Majid - Latifabad No. 11	25.356178, 68.362008
		Christian Colony - Latifabad No 10	25.381938, 68.370632
		Citizen Colony	25.41111, 68.346441
		E Block - Latifabad No 11	25.359684, 68.36041
		F Block - Latifabad No 8	25.363651, 68.363214
		Farooqia Masjid 7D - Latifbabad no. 7	25.372848, 68.353537
		Feroz Colony - Ltifabad No 12	25.369392, 68.369053

		G.G Hani School - Latifabad No 7	25.373579, 68.362915
		GBHS Mir Nabi Bux town	25.401772, 68.389903
		GOR Colony - Latifabad No 1	25.379247, 68.345106
		Goth karan Khan Shoro	25.435683, 68.332437
		Gulistan-e-Sajjad	25.417824, 68.344361
		Gulshan-e-Mehran	24.973748, 67.199876
		Husri	25.314765, 68.42485
		Hussainabad - Latifabad No.3	25.378033, 68.323494
		Hussaini Imambargah Masjid - Latifabad No 11	25.358662, 68.362938
		Hyder Chok	25.385931, 68.367328
		Ikram Traders motor pump Hyderabad, Shahzad pumps hyd.	25.382137, 68.368651
		Imam Bargha Ali Abad	25.392976, 68.383174
		Khursheed Town	25.415609, 68.381929
		Lab-e-Mehran	25.384928, 68.326822
		Liaqat Colony Ground	25.402232, 68.378338
		Marvi Town	25.421945, 68.339144
		Mumtaz Colony	25.381621, 68.366066
		Norai Sharif	25.170978, 68.474782
		Mir NabiBux Town (Noorani Basti)	25.404293, 68.385068
		Old Wahdat Colony	25.381225, 68.33281

		Railway Colony	25.380097, 68.368955
		Sheedi Goth	25.390744, 68.326102
		Tando Alam Mari	25.299535, 68.502729
		Tando Fazal	25.251963, 68.53962
		Tariq Colony	25.362288, 68.347712
9	Mirpurkhas	Daulatpur Minor	25.442777, 68.946944
		Deh 143	25.230158, 68.975716
		Deh 149	25.208737, 68.993989
		Deh 150	25.1904908, 68.991576
		Deh 151	25.506595, 69.013592
		Deh 153	25.17016, 69.02896
		Deh 154	25.202389, 69.05886
		Deh 155	25.216139, 69.038128
		Deh 160	25.175632, 69.04199
		Deh 161	25.181162, 69.046132
		Deh 164	25.106217, 69.104056
		Deh 170	25.110667, 69.067716
		Deh 171	25.12831, 69.091463
		Deh 172	25.132496, 69.093992
		Deh 178	25.143472, 69.114324

		Deh 190	25.05449, 69.14681
		Deh 194	25.048698, 69.187487
		Deh 195	25.042281, 69.203312
		Deh 196	25.035093, 69.15342
		Deh 197	25.002604, 69.174095
		Deh 201	25.017793, 69.180099
		Deh 202	25.028318, 69.247185
		Deh 253	25.362397, 69.113913
		Deh 293	25.230511, 69.232537
		Deh 297	25.2271462, 69.223314
		Deh 301	25.207529, 69.272396
		Deh 307	25.118215, 69.315618
		Digri	25.156775, 69.111924
		Gharibabad City Pumping station Khad Plot	25.529921, 69.020262
		Village Ghulam Muhammad Rind	25.483232, 68.942306
		Gulshan Colony Para	25.515323, 69.00878
		Hingorjo Restaurent	25.713731, 69.137042
		Village Jam Laghari	25.458848, 69.011357
		Village Lal Khan Laghari	25.378798, 69.096787
		Village Niaz Baloch Deh 383	25.413069, 69.061151

		Village Ch. Ghulam Muhammad Laghari Deh Mirwah	25.328993, 69.034099
		Village Taju Khaskheli	25.412056, 68.975439
		Village Wali Muhammad Khatiyan Deh Chahoo	25.4194, 69.105543
		Village Hameer Khaskheli Deh Toori	25.398598, 69.070035
		Jamrao Canal	25.282248, 69.266535
		Jhudo	24.9655078, 69.293713
		Kot Ghulam Muhammad	25.285151, 69.254973
		Deh Malook Halepoto	24.973011, 68.45861
		Mithrao	25.530846, 68.999049
		MMD Near Ratanabad	25.513905, 68.948643
		Naseer Canal	25.050766, 69.103747
		Rahim Nagar Para	25.516827, 69.009483
		Sarfaraz Wah Bridge	25.159668, 69.11102
		Sindhri	25.709017, 69.128515
10	**Shaheed Benazirabad**	Village Mir Sher Muhammad Talpur Panhwarki	25.513975, 69.025112
		Azeem Colony	26.237797, 68.398765
		Bandhi	26.586219, 68.301135
		Bhangwar Colony	26.235458, 68.401746
		Bukhari Mohallah	26.13904, 68.270443
		Daur Town Office	26.352004, 68.363888

		Village Muhammad Ali Halepoto Deh 246	25.466854, 69.092918
		Hirabad City Pumping Station Azizabad and Khad Plot	25.53144, 69.010607
		Jam Sahib	26.2978795, 68.6260691
		Khadhar Market	26.1425535, 68.3700633
		Makhand Village	26.577888, 68.204811
		Mehrabpur Road	26.1361637, 68.2704784
		Mehar Cinema City	25.534246, 69.014058
		Mehran Colony	26.2403113, 68.3946666
		Mukhtiarkar Office	26.2434481, 68.4049575
		Taj Colony	26.2646361, 68.3976477
		Village Jari, Dehjari	26.482697, 68.181956
		Village Makhan Samoon	25.434785, 69.019332
		Manzoorabad Panhwarki	25.507892, 69.018782
		Zanowr Colony Khadhar Road	26.140301, 68.28183
11	Sukkur	Ali Wahan	27.6666279, 68.9355791
		Bagarji	27.7553689, 68.7585003
		Khan Belo Panhwari	27.8182662, 69.0180414
		Khadri Katcho Mando Dero	27.68581, 68.948945
		Mando Dero Rohri	27.6800944, 68.9521578
		New Sukkur	27.7001367, 68.8694187

		Old Sukkur	27.7093847, 68.8779522
		Pano Aqil	27.8144456, 69.1089444
		Rohri	27.685893, 68.89739
		Sadhuja	27.9448697, 69.0851015
		Shahpur	27.728823, 68.808882
		Sukkur	27.7243563, 68.8228082