FLOOD 2022
in Sindh

Provincial Disaster Management Authority
Rehabilitation Department
Government of Sindh

Flood 2022 in Sindh

from June 20, 2022 to January 31, 2023

PREPARED BY

PROVINCIAL DISASTER MANAGEMENT AUTHORITY - SINDH
(PDMA - Sindh)

Contents

Preamble:

Monsoon rains in South Asia are major source of fresh water in the region. Rains fill surface water reserves and recharge aquifers to sustain life and livelihood. At times, abundance and above normal rainfall bring floods and devastation in different parts of the region. This year due to unusual pattern of monsoon, southern Pakistan received large volumes waters due to connective and reoccurring spells of monsoon rains. Sindh, Balochistan and southern Punjab severely impacted due to compound effects of riverine, flash and urban floods. Sindh recorded 426% above normal rainfall during the season (July-September). Rainfall in other provinces remained +450%, +70%, +33%, +104% in Balochistan, Punjab, Khyber Pakhtunkhwa and Gilgit Baltistan respectively.

In July 2022, southern and middle Sindh received heavy rains which caused flooding in urban settings specially in Karachi and Hyderabad. Large scale dewatering operations were conducted to remove accumulated water from low lying areas. PDMA provided man and material resources to District Disaster Management Authorities and other stakeholders for conducting dewatering operations. Till the end of July, situation remained under control expect some parts of southern and coastal districts of the province. However, rains in July saturated the percolation capacity of the soils which complicated the situation in upcoming spells.

The connected and consecutive heavy rain spells during August coupled the medium flood in Indus (11th to 27th) worsen the landscape. Losses and damages exponentially increased to millions and thousands of families displaced due to damaged houses and inundation in and around settlements. The emergency was declared in 24 out of 30 districts of the province and large rescue and recovery operation with assistance of relevant stakeholders were initiated. The major challenge for PDMA was to provide relief to displaced population in almost entire province. As large population of 3 provinces disturbed simultaneously, therefore demand and supply chain of relief goods specially shelters was disturbed and hampered relief operation which further intricated due to damaged communication infrastructure.

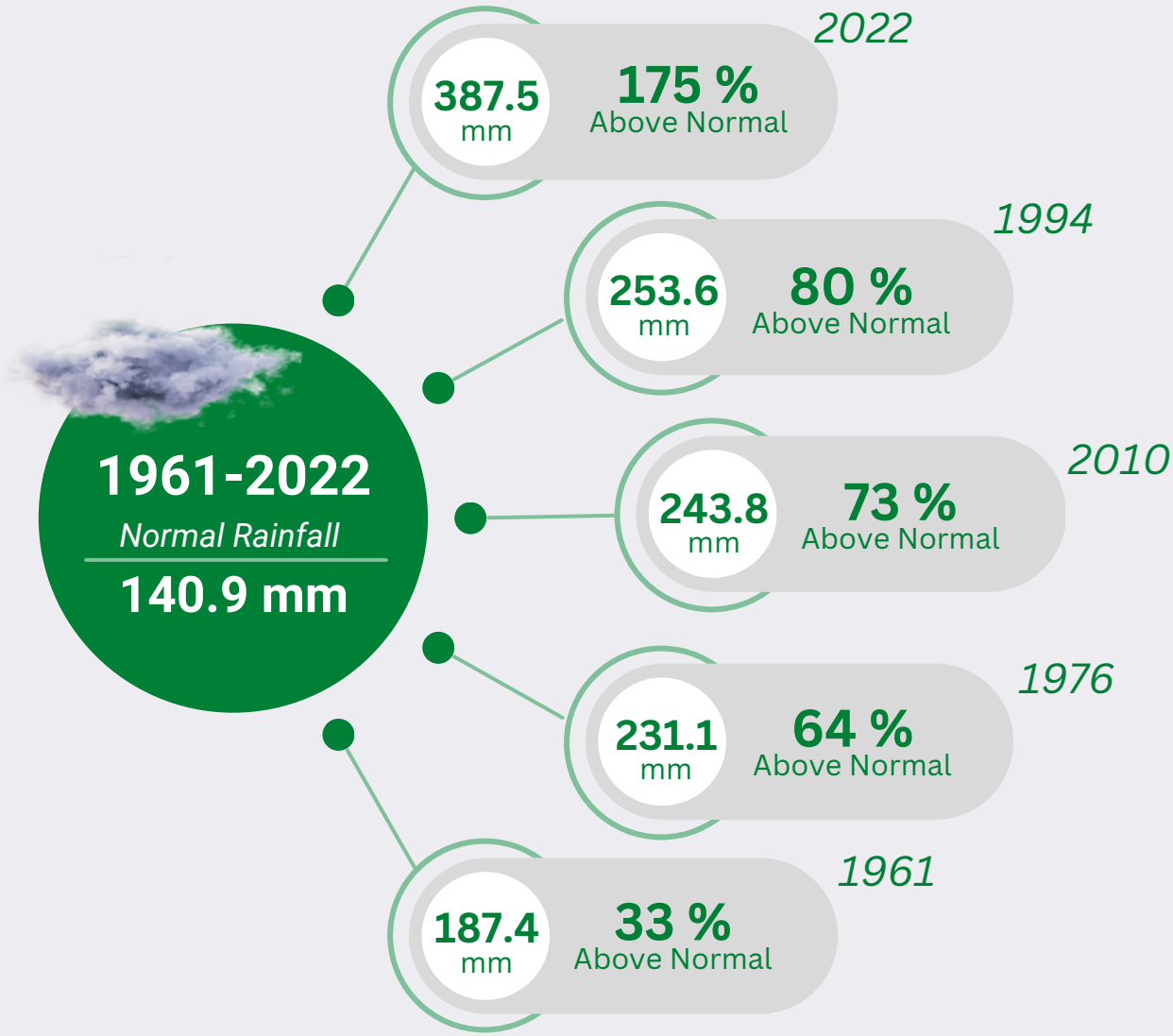
Rains were over till the end of August but domino effects of rain remained dominant during September. Large volumes of water entered in Sindh from Balochistan and smashed the infrastructure and caused havoc in left bank districts of Sindh including Kambar, Larkano, Dadu and Jamshoro. Right bank was inundated due to breaches / overflow in LBOD and irrigation network. Presence of over capacity water overloaded drainage and irrigation network which is the only safe route for dewatering from crop fields and settled areas. Presence of stagnant water over vast lands of the province is still disturbing life and livelihood of thousands of people and families.

During entire event, PDMA played active and untiring role. All efforts were made to bring life to normal in shortest possible time. National and international forums are approached by PDMA to bring ease in life of people of the province. *Till Date*:* 922,377 shelters, 2,425,318 ration bags (food) and other major neccessities have been provided to affected people for early recovery. Joint damage assessment survey is completed and Government of Sindh will shortly initiate rehabilitation phase to reduce the sufferings of affected population.

** Figures qouted in this report cover period till 31st January 2023. For further information and data sources, please visit: www.pdma.gos.pk*

Monsoon 2022

According to Pakistan Meteorological Department (PMD), Pakistan has experienced one of its wettest monsoon season this year since 1961. Continuous, torrential rain caused heavy flash flood in Eastern and Southern Balochistan, Sindh, Southwest Punjab and Khyber Pakhtunkhwa. The Sindh Province was not only impacted by rains but also due to flash floods caused by heavy rain in mountains (Kirthar and Suleman Range) lying along the border of Sindh and Balochistan.



Heaviest monsoon season rainfall records from the past

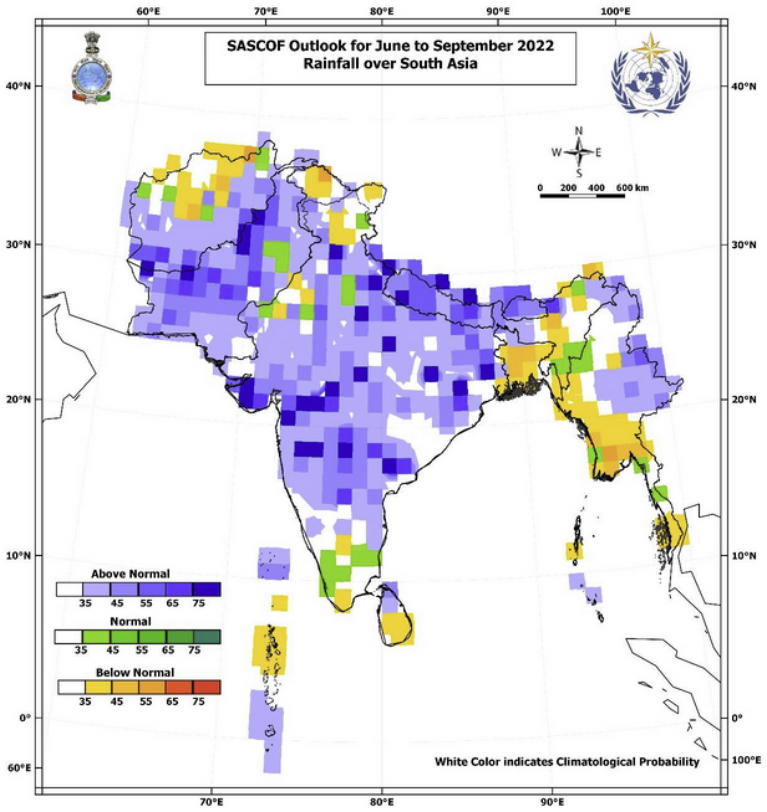
Seasonal Forecast

Pakistan Meteorological Department (PMD) informed in its seasonal forecast report, that due to weak La-Niña conditions and negative phase of Indian Ocean Dipole (IOD) above normal rains were expected in the region. According to the outlook issued, following were the likelihoods for this monsoon season (July- September):

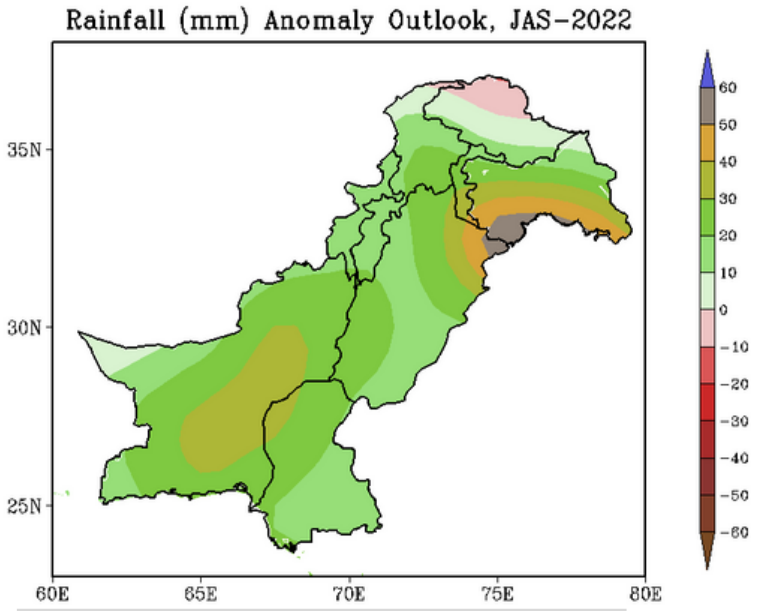
- *Above Normal rainfall expected over Sindh and Punjab*
- *Slightly above normal rainfall in the remaining parts of the country*
- *First phase (1st July to mid-August) of monsoon is expected to be wet as compared to the last phase (mid-August to end of September).*

In a consensus, issued in *SASCOF-22** there was strong agreement among the experts that La-Niña conditions are likely to be favorable for normal to above normal southwest monsoon rainfall over parts of South Asia.

Based on the seasonal forecasts as mentioned, PDMA Sindh issued alerts to relevant departments for necessary preparation in view of likely impacts.



SASCOF Outlook for June to September 2022 Rainfall over South Asia



Rainfall Anomaly Outlook, JAS-2022, issued by Pakistan Meteorological Department (PMD)

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

Monsoon 2022- Sindh

Onset of monsoon in Sindh was observed earlier from normal i.e., 1st July. First rains in Sindh occurred on 29, 30 June. This season brought one of the heaviest rains in Sindh causing overflows and inundations in 24 of 30 districts.

Rainfall

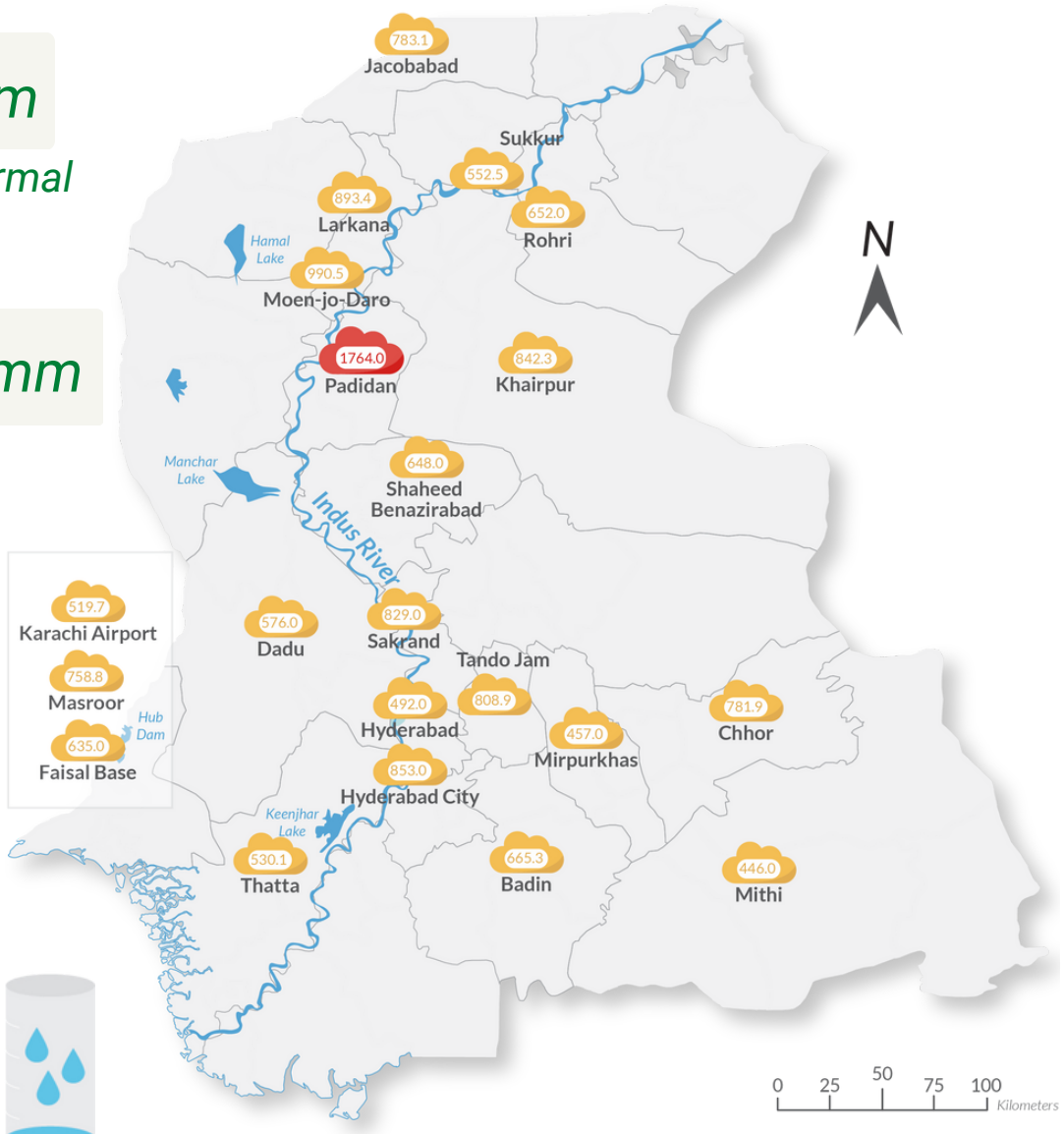
703.2 *mm*

426% above normal

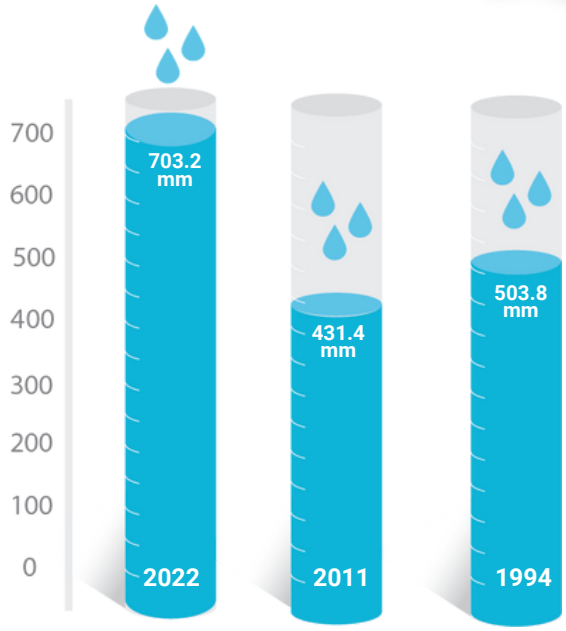
Highest Rainfall

1763.9 *mm*

at Padidan



Accumulated Rainfall recorded at PMD Station during Monsoon Season (July - September)



Heaviest rainfall records of Sindh as recorded by PMD

June

Pre-Monsoon rains started in Sindh Province from 20th June and lasted till 23rd June 2022. The rains mainly occurred in northern and southern districts i.e. Jacobabad, Larkana, Sukkur in the North and Karachi and Tharparkar in the South.

97.0mm
Sukkur

36.0mm
Rohri

21.6mm
Karachi

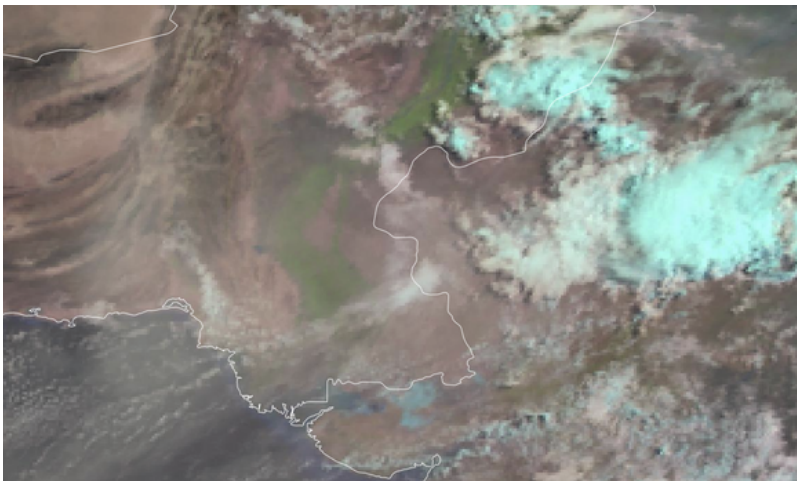
14.0mm
Jacobabad

4.0mm
Badin

4.0mm
Mirpurkhas

4.0mm
Sakrand

3.2mm
Khairpur



Cloud formation over northern and southern regions of Sindh on 20th June, 2022 03:00 UTC

These lighter rains lasted in end of June and normalized the high temperatures.

The heaviest rainfall recorded in one day was:

82 *mm* *at Sukkur on 20th June, 2022*

Image Courtesy: European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) Data Services

July

Three main spells were received in Sindh during the month of July as a result of seasonal low over West Balochistan and Iran along with moist currents from Arabian Sea and Bay of Bengal. Heavy rains were recorded in Sindh, Balochistan and parts of Khyber Pakhtunkhwa and South Punjab.

Wet Spells

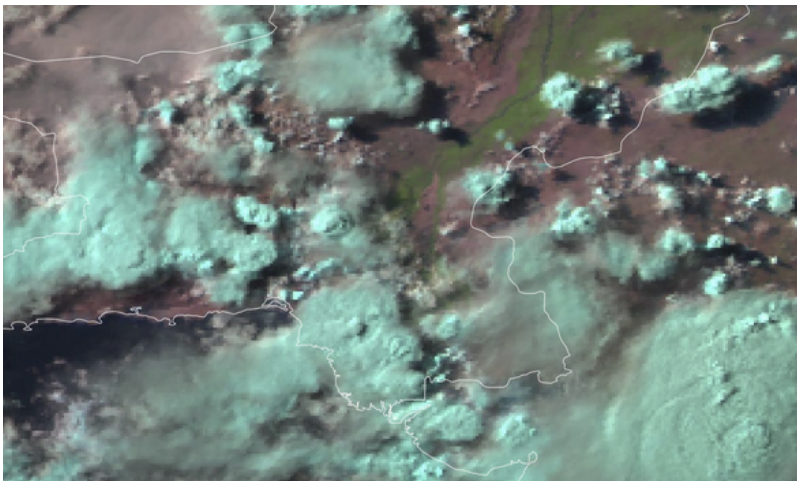
03

- *5th - 8th*
- *13th - 16th*
- *20th - 27th*

Rainfall Departure

307%

above normal



Dense rain bearing clouds entering Sindh from the sea 5th July, 2022 13:00 UTC

Highest Rainfall

584.8 mm	535.4 mm	462 mm	348.3 mm	335.7 mm
MASROOR	PADIDAN	FAISAL BASE	KARACHI AIRPORT	BADIN

Impacts

Heavy rain caused urban flooding in low lying areas of all the major cities i.e. Karachi, Hyderabad, Sukkur, Larkana. Karachi being metropolitan city with low or insufficient storm drainage was mostly affected during these spells.

Image Courtesy: European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) Data Services

August

Four monsoon lows were developed in August, two of them resulted in significant rain spells. Presence of depression in south of Sindh resulted in formation of huge cloud mass over entire province.

Wet Spells

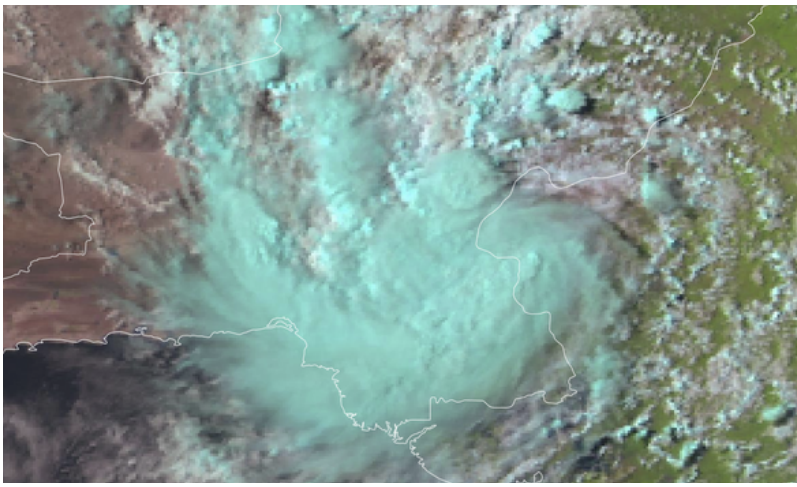
02

- *16th - 20th*
- *24th - 27th*

Rainfall Departure

726%

above normal



Heavy rain clouds concentering over central Sindh
18th August, 2022 11:30 UTC

Highest Rainfall

PADIDAN	MOEN JO DARO	LARKANA	SAKRAND	KHAIRPUR
1228.5 mm	779.5 mm	762.3 mm	617.0 mm	606.3 mm

Impacts

The earlier spells saturated soil permeability and rainfall during August resulted in runoff or stagnated in low lying areas. Most of damages, losses and displacement of people occurred during these spells. Additionally, huge quantum of water from Balochistan province overloaded the drainage and irrigation networks of the province which developed domino effects and resulted in breaching / overflowing of the systems on right bank of Indus.

Image Courtesy: European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) Data Services

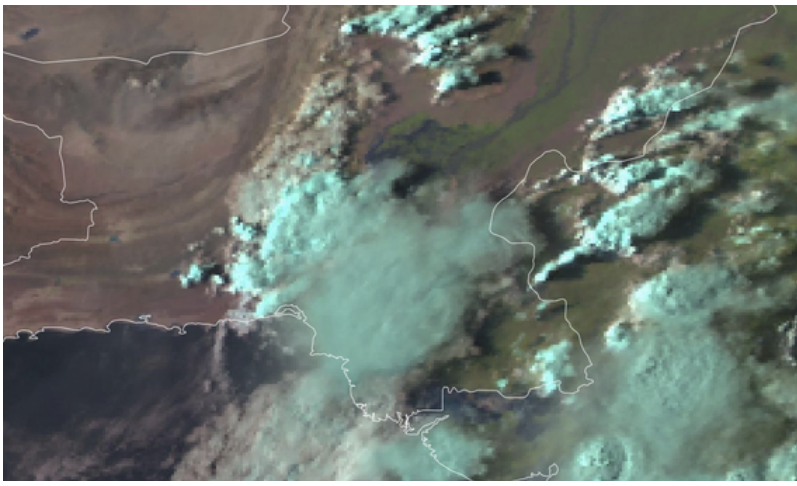
September

September remained relatively calm. Four spells occurred over the the country. Out of 4 spells, one affected South eastern Sindh.

Wet Spells

04

- *4th - 6th*
- *10th - 14th*
- *17*th - 19th
- 23th - 26th



Clouds from Arabian Sea entering Sindh on 12th September, 2022 12:15 UTC

Rainfall Departure

22%

below normal

Highest Rainfall

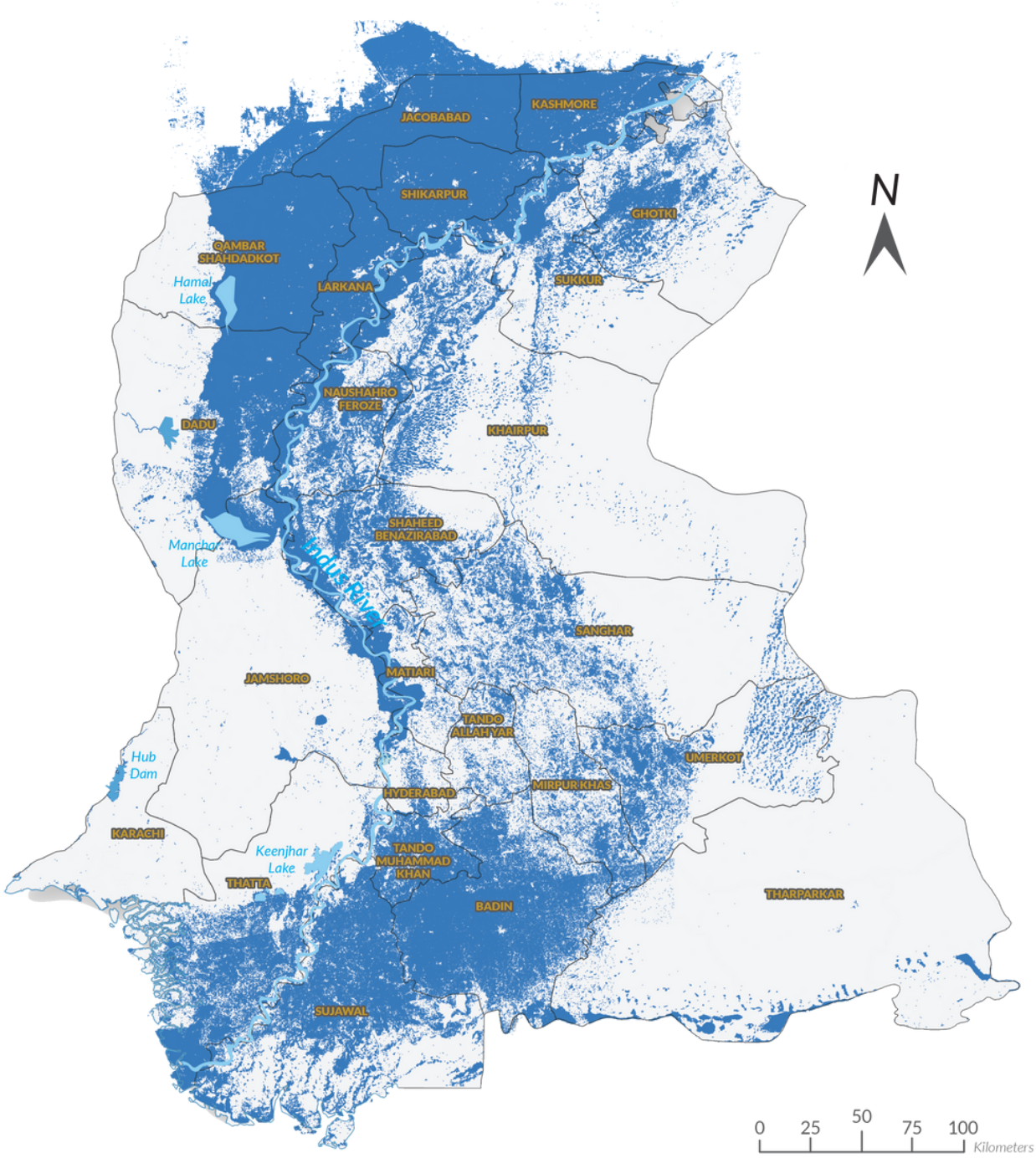
57.0 mm	43.4 mm	35 mm	28 mm	24 mm
MITHI	KARACHI AIRPORT	FAISAL BASE	MIRPURKHAS	CHHOR

Impacts

Despite September's lower-than-average rainfall, large tract of land on right bank of Indus was inundated due to breaches in Manchar and other drainage system. Situation in Dadu, Kamber and Jamshoro districts was further aggravated by breaches / overflowing of water in irrigation and drainage channels. Balochistan saw 450% more rain than usual.

Image Courtesy: European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) Data Services

Areal Extent of Flood Water



Consecutive and continuous heavy rain spells flooded almost entire populated area of the province. Map shows flood inundation as of August 28, 2022. As a result, homes in millions were damaged leaving thousands of families dispersed in camps and other safe places. A large number of livestock was lost in addition to crop loss in millions. Secondary problems like malaria, cholera, diarrhea, dengue, and other infectious diseases were raised due to abundance of water around human settlements.

Losses and Damages

Initial data on losses and damages was collected through DDMA's for estimation and organization to disaster response. Synoptic state of losses and damages is presented below;

Deaths and Injuries

Deaths
823

Injuries
8,422

Livestock
436,435

Population Affected

Affected Population
12,356,860

Displaced Population
7,383,023

Infrastructure Damages

Houses (Count)
2,087,186

Roads (Km)
8,463

Bridges (Count)
165

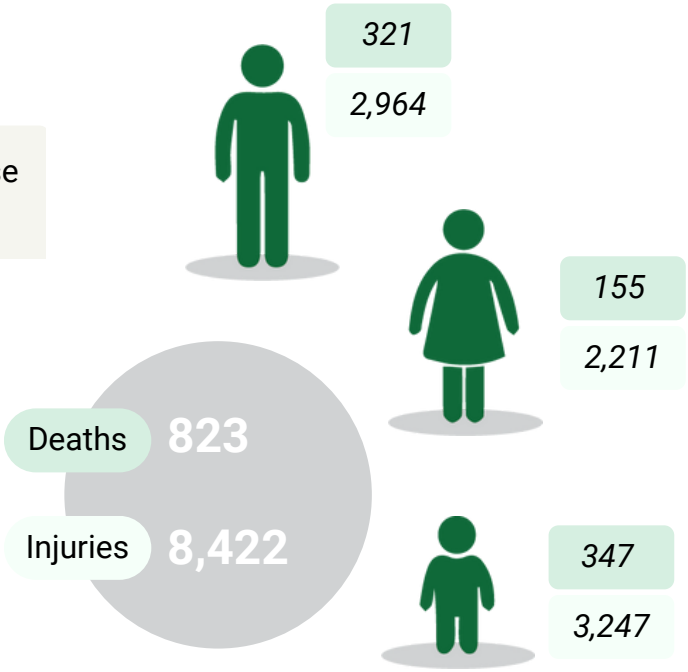
Causeways(Running Foot)
2,125

Crop Damages

Acres
3,777,272

Deaths and Injuries

Segregation of deaths and injuries and district-wise distribution remained as;

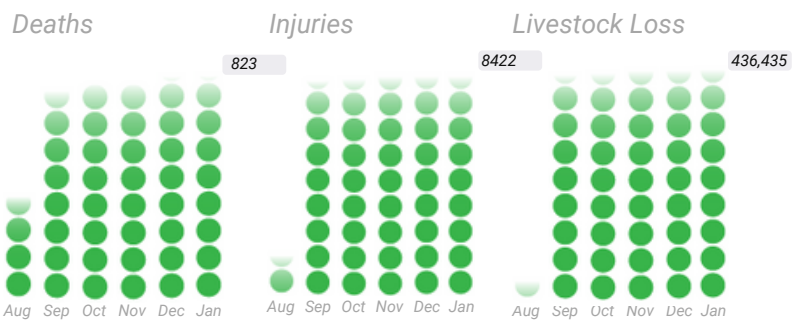


Livestock

Livestock plays important role particularly in rural economy. It is does not only support local consumption of diary and meat but also large number of population depends on livestock business. Sindh. Loss of livestock results in loss of survival and livelihood for population engaged in this business. A large number of livestock losses were reported. Details are;

Most Affected Districts

Khairpur	93	*60*	*34,373*
Shikarpur	93	124	7,802
N. Feroze	85	61	36,588



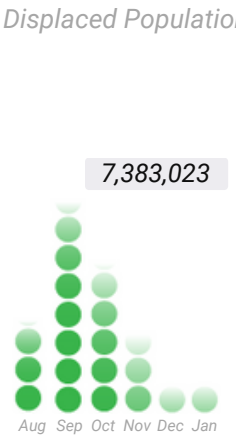
		Human Deaths	Injuries	Animal Deaths
Larkana	Larkana	48	7,207	25,451
	Kamber Shahdadkot	35	161	26,568
	Kashmore	31	-	24,201
	Shikarpur	93	124	7,802
	Jacobabad	20	35	15,680
Hyderabad	Hyderabad	11	01	4,735
	Jamshoro	48	26	17,169
	Dadu	48	-	57,569
	Tando Allahyar	16	-	2,635
	Tando M. Khan	08	-	2,603
	Badin	41	03	23,433
	Matiari	16	104	6,788
	Thatta	11	22	7,833
	Sujawal	05	02	7,677
Sukkur	Sukkur	33	19	12,011
	Khairpur	93	60	34,373
	Ghotki	20	16	32,616
SBA	Shaheed Benazirabad	43	05	32,737
	N. Feroze	85	61	36,588
	Sanghar	22	15	31,899
Mirpurkhas	Mirpurkhas	14	14	7,211
	Umerkot	08	02	10,722
	Tharparkar	08	10	2,306
	Karachi	66	535	5,828

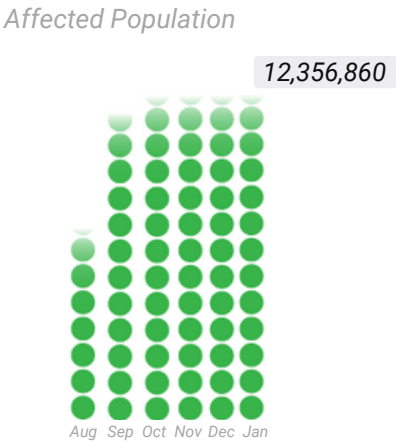
Affected and Displaced Population:

Rains along with cumulative effect of water flowing in Sindh occurred in most populated lands of Sindh. The main agrarian belt also lie in same plains therefore, rains and accompanied floods resulted in large scale suffering for population. Population in millions were affected and displaced to safer places due to unlivable conditions in native residences. Details are;

Most Affected Districts

Khairpur	1,265,477	1,218,177
Larkana	1,217,428	1,071,333
Sanghar	1,292,603	315,444
Mirpurkhas	925,880	472,168
Kamber Shahdadkot	890,891	390,245



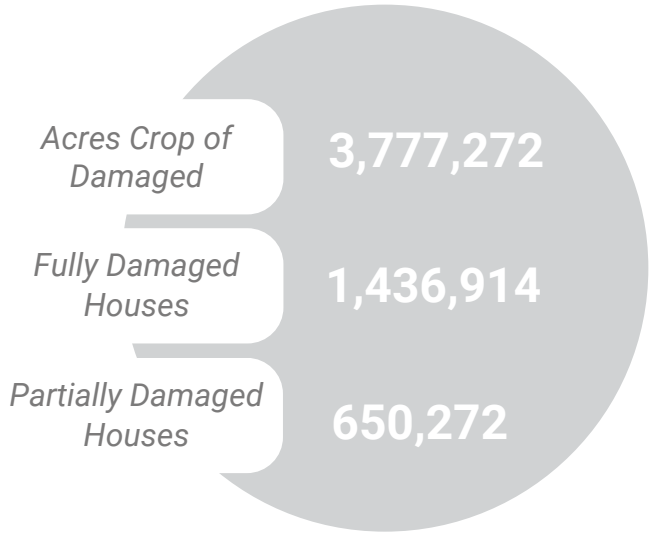


		Population Affected	Displaced Population
Larkana	Larkana	1,217,428 **79.1%**	1,071,333
	Kamber Shahdadkot	890,891 **66.8%**	390,245
	Kashmore	679,756 **69.5%**	311,262
	Shikarpur	400,000 **32.40%**	120,000
	Jacobabad	545,230 **54.9%**	256,584
Hyderabad	Hyderabad	30,240 **1.42%**	33,700
	Jamshoro	382,295 **38.04%**	263,286
	Dadu	849,380 **57.4%**	804,271
	Tando Allahyar	126,511 **14.4%**	36,700
	Tando M. Khan	63,081 **8.94%**	15,500
	Badin	277,502 **16.1%**	32,278
	Matiari	250,000 **34.7%**	51,000
	Thatta	227,156 **23.5%**	198,547
	Sujawal	154,000 **19.5%**	142,196
Sukkur	Sukkur	393,810 **27.8%**	376,109
	Khairpur	1,265,477 **51.9%**	1,218,177
	Ghotki	907,059 **54.6%**	86,590
SBA	Shaheed Benazirabad	580,989 **34.8%**	389,529
	N. Feroze	234,168 **14.2%**	221,001
	Sanghar	1,292,603 **60.8%**	315,444
Mirpurkhas	Mirpurkhas	925,880 **62.0%**	472,168
	Umerkot	557,280 **50.2%**	557,280
	Tharparkar	88,987 **5.4%**	19,315
	Karachi	17,137 **0.003%**	508

Crop Damaged:

Flood 2022, caused by monsoon rains triple the usual severity, wiped out huge track of crops, leaving already poverty-stricken families struggling to obtain food.

Sindh is still facing an unprecedented food security crisis due to devastating effects of flood. The aggregated 11% of crops , 42% rice, 23% cotton and 31% of sugarcane productions are damaged. The breakdown of crops damages are as follows;

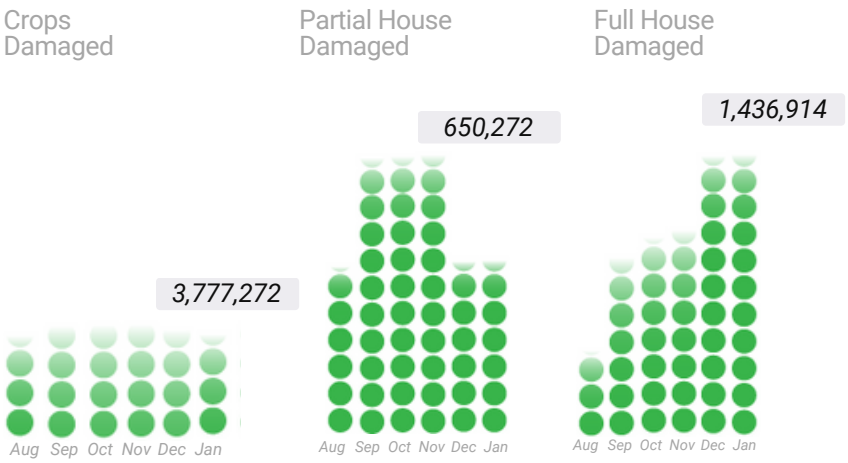


Houses Damaged:

More than million of homes have been damaged. Around a half million of displaced population remained in organized camps and tent cities. The total of 1,610,826 houses are damaged breaking up in partially and totally damaged houses.

Most Affected Districts

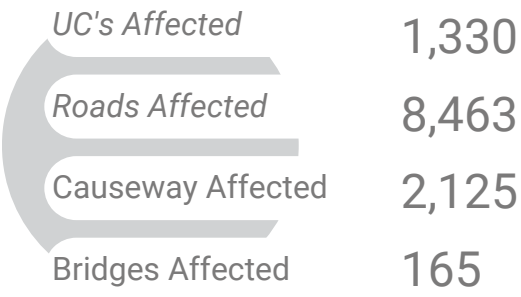
Khairpur	*356,582*	*54,820*	*224,346*
Larkana	157,323	30,455	102,163
N. Feroze	251,875	*43,688*	105,110



		Crops Damaged		Partial House Damaged	Full House Damaged
Larkana	Larkana		157,323 44.2%	30,455	102,163
	Kamber Shahdadkot		194,327 24.9%	29,478	118,132
	Kashmore		159,731 37.3%	32,027	44,540
	Shikarpur		153,623 30.5%	19,047	72,212
	Jacobabad		255,678 44.5%	24,073	89,784
Hyderabad	Hyderabad		61,465 36.3%	11,119	9,069
	Jamshoro		25,527 6.26%	18,460	43,290
	Dadu		97,330 10.5%	34,714	133,295
	Tando Allahyar		114,906 32.7%	9,555	20,597
	Tando M. Khan		145,781 38.5%	9,628	18,801
	Badin		226,044 17.7%	49,125	62,124
	Matiari		140,833 46.7%	20,043	26,662
	Thatta		47,682 8.03%	13,084	11,684
	Sujawal		86,670 13.9%	27,168	25,531
Sukkur	Sukkur		133,900 31.0%	32,958	51,334
	Khairpur		356,582 43.1%	54,820	224,346
	Ghotki		346,863 47.3%	32,668	52,152
SBA	Shaheed Benazirabad		248,773 32.5%	41,588	72,791
	N. Feroze		251,875 42.2%	43,688	105,110
	Sanghar		310,039 29.2%	39,443	66,464
Mirpurkhas	Mirpurkhas		169,353 24.0%	36,516	49,943
	Umerkot		88,885 11.5%	36,811	31,797
	Tharparkar		4,082 0.18%	3,786	5,056
	Karachi		-	18	37

Infrastructure Damaged

The Flood 2022 is an eye opener and it is right time to implement disaster risk reduction in development planning. If business is continued as usual, event of such scale will bring damages to civil infrastructure in billions on occurrence of each event. Proper infrastructure planning is required prior to any of the constructions. Reported infrastructure damages are given as;



	UC's Affected	Roads (km) Affected	Causeway (Rft) Affected	Bridges Affected
Larkana	*260*	*1,078*	*-*	*05*
Hyderabad	*487*	*3,221*	*1,375*	*122*
Sukkur	*221*	*1,055*	*-*	*03*
Shaheed Benazirabad	*201*	*1,965*	*-*	*27*
Mirpurkhas	*95*	*1,136*	*-*	*06*
Karachi	*66*	*08*	*750*	*02*

Relief Activities

The flood 2022 is one of its kind disaster in known history of the province. The devastation was compounded by mixed effects of rain, riverine flood and flash floods from hills torrents. 23 out 30 districts of the province were simultaneously paralyzed and organization and management of such a large scale response was a challenge for Provincial Disaster Management Authority. The situation was further complicated by unavailability of relief goods in required quantity, damaged roads and links, law and order situation and at some extent relief snatching incidents. However, even in presence of all difficulties, PDMA extended its 24/7 support in disaster response. Details of initial relief and response are;

Shelter

Tents
918,823

Tarpaulin Sheets
604,969

Mosquito Nets
3,848,910

Animal Mosquito Nets
91,654

Food & Security

Ration Bags
2,425,318

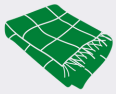
Cooked Food
251,606

Water(Litres)
812,773

Medicines (Tons)
100

Household

Sleeping Mats
96,469



Blankets
1,772,946

Jerry Cans
112,075

Machinery

Truck Mounted Dewatering Pump
113

Small Dewatering Pump
175

RO Plants
28

Shelter:

During flood emergency in Sindh, thousands of families were shelter-less on roadsides or on elevated places around their villages waiting for tents as the number of villages were severely disturbed by floods.

PDMA provided tents for shelter to the displaced families in flood-affected areas of Sindh Province. Shelters were provided to 7.3 million displaced / homeless people. With average family size comprising of 6 people about 1.2 million persons were facilitated through shelters and establishment of 2992 relief camps by DDMAs. In addition to tents, tarpaulins, mosquito nets, animal mosquito net, jerry cans, bed sheets, pillows and kitchen sets were provided to flood affectees.

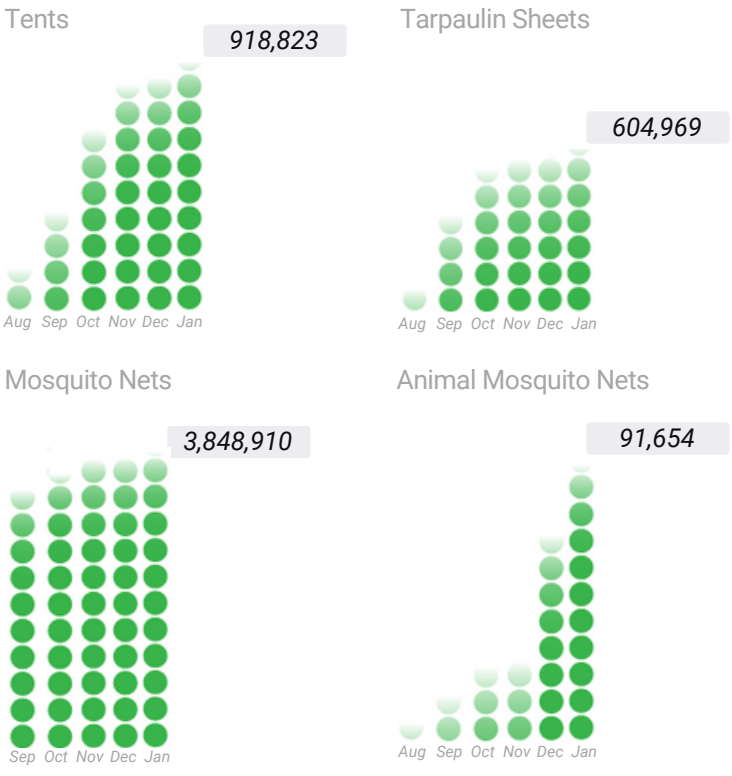
Tents	918,823
Tarpuline Sheets	604,969
Mosquito Nets	3,848,910
Animal Mosq. Nets	91,654

Most Recipient

Kamber Shahdadkot	173,597	85,042	264,434	900
Larkana	81,699	68,057	396,950	11,799
Khairpur	91,148	68,759	312,894	4,434

Major Contributors

PDMA	688,845	488,970	2,245,230	91,654
NDMA (ARMY)	187,787	46,333	1,567,232	-
UNHCR	14,973	53,956	4,000	-



		Tents	Tarpaulin	Mosquito Nets	Animal Nets
Larkana	Larkana	81,699	68,057	396,950	11,798
	Kamber Shahdadkot	173,597	85,042	264,434	900
	Kashmore	10,801	6,579	133,795	-
	Shikarpur	20,339	11,500	192,948	800
	Jacobabad	55,801	18,443	199,444	16,800
Hyderabad	Hyderabad	8,984	6,100	159,125	-
	Jamshoro	55,073	20,660	204,092	1,386
	Dadu	81,283	60,646	253,954	11,117
	Tando Allahyar	13,865	8,600	57,700	9,944
	Tando M. Khan	8,756	9,050	77,500	800
	Badin	22,789	18,401	149,937	-
	Matiari	16,515	15,655	145,907	451
	Thatta	22,190	16,500	138,005	800
	Sujawal	19,278	12,400	99,465	800
Sukkur	Sukkur	34,827	30,036	106,297	-
	Khairpur	91,148	68,759	312,894	9,851
	Ghotki	10,068	4,500	56,000	-
SBA	Shaheed Benazirabad	50,111	41,918	138,935	-
	N. Feroze	62,022	45,250	218,460	1,251
	Sanghar	28,379	25,200	209,905	16,702
Mirpurkhas	Mirpurkhas	28,284	14,580	239,357	4,000
	Umerkot	8,326	9,300	65,690	4,254
	Tharparkar	11,603	7,750	23,450	-
	Karachi	2011	-	500	212

Food & Security

During disaster and emergencies survival of people is utmost important. For survival, supply of food and clean drinking water matters the most. During initial phase of disaster PDMA provided / arranged cooked food to families and over the time supplied ration bags to flood victims. Items in ration bags with essential commodities were sufficient for an average family for 15 days. For safe drinking water, families were provided drinking water bottles during initial phase and afterwards PDMA arranged portable water treatment plants for uninterruptible supply for safe water to families.

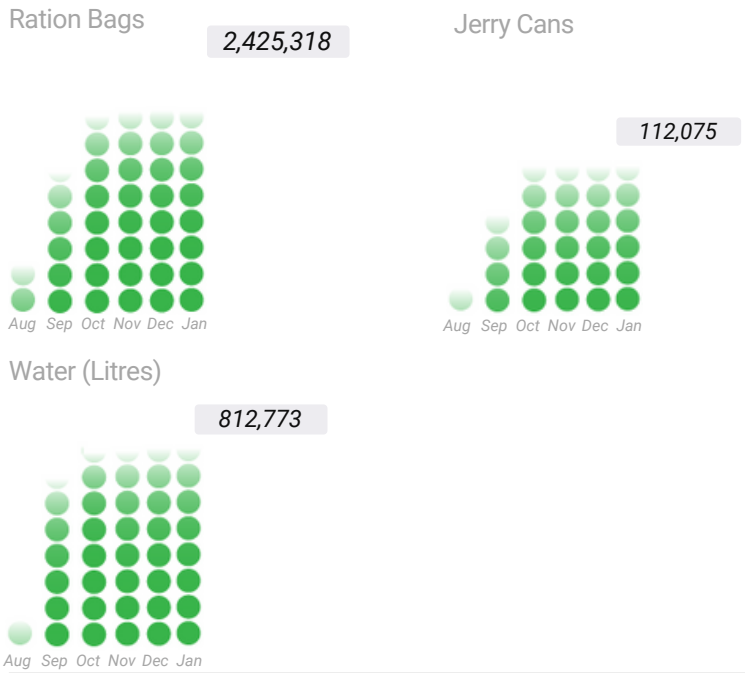
Ration Bags	2,425,318
Jerry Cans	112,075
Water(Litres)	812,773

Most Recipient

Jamshoro	97,996	12,850	173,335
Dadu	260,295	14,564	76,922
Khairpur	170,330	13,434	-

Major Contributors

PDMA	1,780,603	62,527	200,217
UN-WFP	347,293	-	-
District Admin	155,320	-	-



		Ration Bags	Jerry Cans	Water (Litres)
Larkana	Larkana	186,271	8,787	-
	Kamber Shahdadkot	198,587	12,154	12,404
	Kashmore	45,823	600	-
	Shikarpur	91,177	400	-
	Jacobabad	134,542	4520	79,995
Hyderabad	Hyderabad	83,125	1,000	-
	Jamshoro	97,996	12,850	173,335
	Dadu	260,295	14,564	76,922
	Tando Allahyar	37,699	500	-
	Tando M. Khan	20,410	2,200	-
	Badin	88,904	400	10,240
	Matiari	62,159	5,178	2,815
	Thatta	68,710	800	-
	Sujawal	86,731	4,942	-
Sukkur	Sukkur	114,170	6,850	20,691
	Khairpur	170,330	13,434	-
	Ghotki	25,700	1890	-
SBA	Shaheed Benazirabad	162,780	8,008	72,550
	N. Feroze	154,425	5,510	-
	Sanghar	136,234	858	-
Mirpurkhas	Mirpurkhas	134,581	4,318	-
	Umerkot	42,079	1,600	-
	Tharparkar	17,750	500	-
	Karachi	-	212	4981

Household

Other than ration bags and clean drinking water families were provided essential household items like pillows and bed sheets. Though flood occurred in summer season but PDMA was aware that, water recession will take time and effects of water will continue till winter, therefore, PDMA planned procurement of warm blankets for flood affectees well in advance. Before the the occurrence of winter, affected population was facilitated with blankets to avoid effects for cold weather.

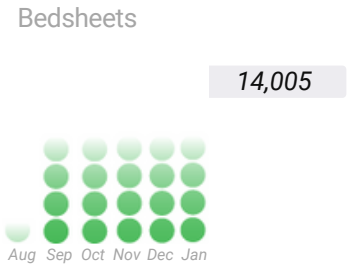
Blankets	1,772,946
Pillows	11,274
Bedsheets	14,005

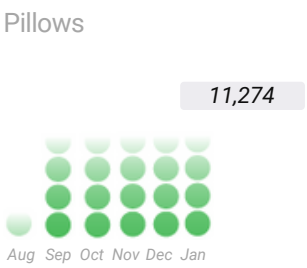
Most Recipient

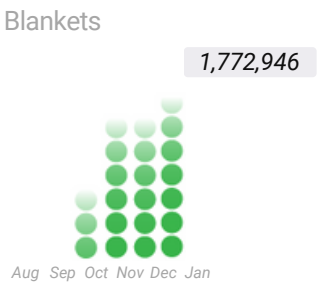
Kamber Shahdadkot	3,500	635	157,980
Larkana	400	885	139,000
Khairpur	855	1,425	147,930

Major Contributors

PDMA	14,005	11,274	1,544,301
UNHCR	-	-	227,980







		Bedsheets	Pillows	Blankets
Larkana	Larkana	400	885	139,000
	Kamber Shahdadkot	3,500	635	157,980
	Kashmore	200	200	14,300
	Shikarpur	-	-	134,000
	Jacobabad	-	159	147,775
Hyderabad	Hyderabad	-	-	-
	Jamshoro	3,500	635	81,200
	Dadu	-	485	163,551
	Tando Allahyar	-	124	41,000
	Tando M. Khan	1,500	1,500	16,000
	Badin	-	159	24,640
	Matiari	-	2,075	38,000
	Thatta	-	159	30,000
	Sujawal	-	624	50,000
Sukkur	Sukkur	500	500	124,295
	Khairpur	855	1,425	147,930
	Ghotki	1,050	139	47,750
SBA	Shaheed Benazirabad	-	-	72,000
	N. Feroze	500	1,135	142,525
	Sanghar	-	276	70,000
Mirpurkhas	Mirpurkhas	-	159	70,000
	Umerkot	-	-	55,000
	Tharparkar	-	-	5,000
	Karachi	-	-	-

Machinery

Low gradients coupled with human interactions have made poor drainage system in the province. Most the times water suction is required to dewater from settled areas. During each rainy season, PDMA provide portable machinery to concerned quarters for removal of stagnant water from low lying areas. This year water suction pumps of variable sized and capacities were provided to DDMAs and other authorities for removal of water.

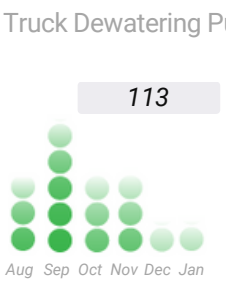
Truck Dewatering Pump	113
Small Dewatering Pump	175
RO Plant	28

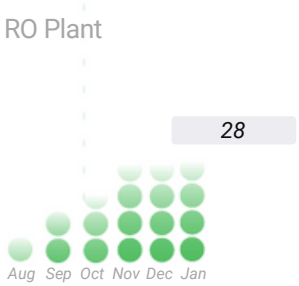
Most Recipient

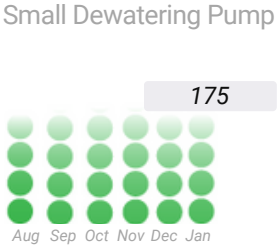
Khairpur	20	10	01
Larkana	11	18	09
Matiari	11	07	01

Major Contributors

PDMA	113	85	-
NDMA	-	90	-







		Truck Mounted Dewatering Pump	Small Dewatering Pump	RO Plants
Larkana	Larkana	11	18	09
	Kamber Shahdadkot	04	03	02
	Kashmore	02	02	-
	Shikarpur	01	04	-
	Jacobabad	03	06	-
Hyderabad	Hyderabad	08	06	-
	Jamshoro	05	02	03
	Dadu	02	04	01
	Tando Allahyar	02	15	-
	Tando M. Khan	02	12	-
	Badin	06	18	01
	Matiari	11	07	01
	Thatta	03	04	-
	Sujawal	06	04	-
Sukkur	Sukkur	14	-	-
	Khairpur	20	10	01
	Ghotki	03	03	-
SBA	Shaheed Benazirabad	-	06	06
	N. Feroze	-	07	01
	Sanghar	03	10	01
Mirpurkhas	Mirpurkhas	10	04	02
	Umerkot	-	06	-
	Tharparkar	-	-	-
	Karachi	-	19	-

Conclusion

Flood 2022 in Sindh is a historic event. Record breaking precipitation was observed in most parts of the province. Due to various human and natural causes dewatering process in province is slow. The rain water accumulation was further aggravated due to coincided water flows from Balochistan and flooding in river Indus. Overloaded irrigation and drainage networks breached and dewatering process became more difficult. Cumulative effects caused large tract of most populated lands of the province went under water and the population and livestock in millions and crops in thousands of acres affected. The situation during flood 2010 was much alike but this year both right and left banks of Indus were simultaneously affected hence resulted in large scale human disturbance. Resources of government were stretched to the limits and the international community came to assist the government and its affectees.

Impacts of climate change and changing weather systems and patterns are visible all around the globe. In recent years, record breaking severe weather have had occurred in different parts of the world. This change is likely to continue in one form or other and will manifest in heavy rains, severe weather, heatwaves and alike hazards. Sindh is situated in cross roads of weather and may likely to receive more impacts of climate change. In this scenario, disaster management paradigm of the province needs to be changed. Currently, disaster management in the province is inclined more towards disaster response which should be focused and aligned to disaster risk reduction. Disaster risk reduction can only be achieved when all efforts are directional and cohesive to meet the future challenges. All actors of the society including public sector are required to act and implement disaster risk reduction in development for sustainable growth. All public departments are required to prepare disaster management plans in line with national and provincial plans.

Further, some permanent disaster threats exist in the province, which must be addressed for permanent remedies. The unattended rain water from Balochistan is a permanent threat for the population living on the right bank of the Indus. Similarly, well-planned, eco-friendly and holistic drainage system on the left bank is important for the safe conveyance of excessive water. Roads and other lateral structures require the inclusion of well-studied culverts/bridges to allow flow of water on natural routes. Depression require restoration to natural condition and above all major cities and town should have separate storm water systems. Permanent solution to such problems is only means for meaningful disaster management, otherwise, occurrence of each major event will exhaust government resources as adhoc solutions mostly waste resources.

Provincial Disaster Management Authority, Sindh with its limited resources is trying its best to bring disaster management on contemporary lines and gradually results of initiates taken by the authority will be on surface. However, disaster management requires due role to be played by all actors related to development and disaster management.