







CLIMATE CHANGE NARRATIVES OF PAKISTAN

A PROJECT FUNDED BY NATIONAL GEOGRAPHIC SOCIETY













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INTRODUCTION

This project aims to put forth the narratives of people around climate change and its effects on their daily lives in Pakistan. We travelled across the country and collected stories from the coastal, rural areas and lakes of Sindh, the desert of Thar, the plains of Punjab and the mountainous regions of Chitral, Hunza and Gilgit in Northern Pakistan. This e-book is a collection of their stories and photographs which highlight the extent to which climate change influences the lives of these communities.

Most of our stories and interviewees are from the underprivileged communities which are the most vulnerable to the effects of climate change. The prime objective of this documentation through the lens of the common people is to voice the lives and concerns of those who are most at risk. A project such as this can help build an empathetic narrative on climate change by bringing to the forefront real stories from the field.

This e-book is divided into four main parts: mountains, deserts and plains, coastal areas, lakes and rural areas. It is then sub-divided into stories from specific cities and villages of these areas. There are a total of 32 stories from 16 locations that have been featured in this book.

These photographs provide brief yet poignant glimpses into the lives of the people most vulnerable to climate change in Pakistan. We hope you will take this journey with us.

TEAM

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Amber Ajani is a Fulbright alumna with a Master's degree in Environmental Science from American University, USA. She is the recipient of UNFCCC-UNU Early Career Climate Fellowship and currently works in Bonn, Germany. Her work in Pakistan includes teaching experience at Habib University and Institute of Business Administration in Karachi and conservation experience with International Union for Conservation of Nature (IUCN), Shehri-CBE and Subh-e-Nau Magazine where she worked on projects dealing with environmental education, integrated coastal management, climate change and environmental journalism.

She has also undertaken international consultancy projects with Iracambi Research Center in Brazil and Greenpeace USA and has interned with Sierra Club and the Climate Reality Project in Washington D.C. She also developed a "Climate Change Directory for Pakistan" for the Friedrich Naumann Foundation (FNF) and her research publication deals with a comparative carbon sequestration study of urban trees in Pakistan.

SARESH KHEMANI
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Saresh Khemani is an educationalist by profession, she works as an Academic Advisor at Habib University and holds an MPhil in Education from the Aga Khan University - Institute for Educational Development

Her role in this project was to facilitate the implementation of the project. Her key tasks were to support in identification, coordination and liaison with local communities in target areas, establish field contacts in target areas and ensure regular interaction, maintain research records, provide technical backstopping, advice and support in implementation of the project activities and to provide writing and editing support for the final project report.

HAYA FATIMA IQBAL
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Haya Fatima Iqbal is an Academy and Emmy Award-winning documentary filmmaker and directs, produces, and shoots films all across Pakistan.

She is interested in covering ethnic subcultures and politics in Pakistan, as well as showcasing human rights issues that affect people across the globe. Haya has worked with HBO Documentary, CNN, BBC, Channel 4 UK, the Thomson Reuters Foundation, Deutsche Welle (DW), Geo News, and the Dawn newspaper, among other media organizations.

Haya is the Co Founder of Documentary Association of Pakistan (DAP), an initiative to promote the culture of documentary watching in public spaces all over Pakistan. She also teaches communication and journalism to undergraduate students at Habib University, Karachi. She is an Acumen fellow and a Fulbright alumna. She did her Masters in News & Documentary from New York University.

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This section introduces and highlights some of the people affected by climate change in mountainous areas of Pakistan and their stories

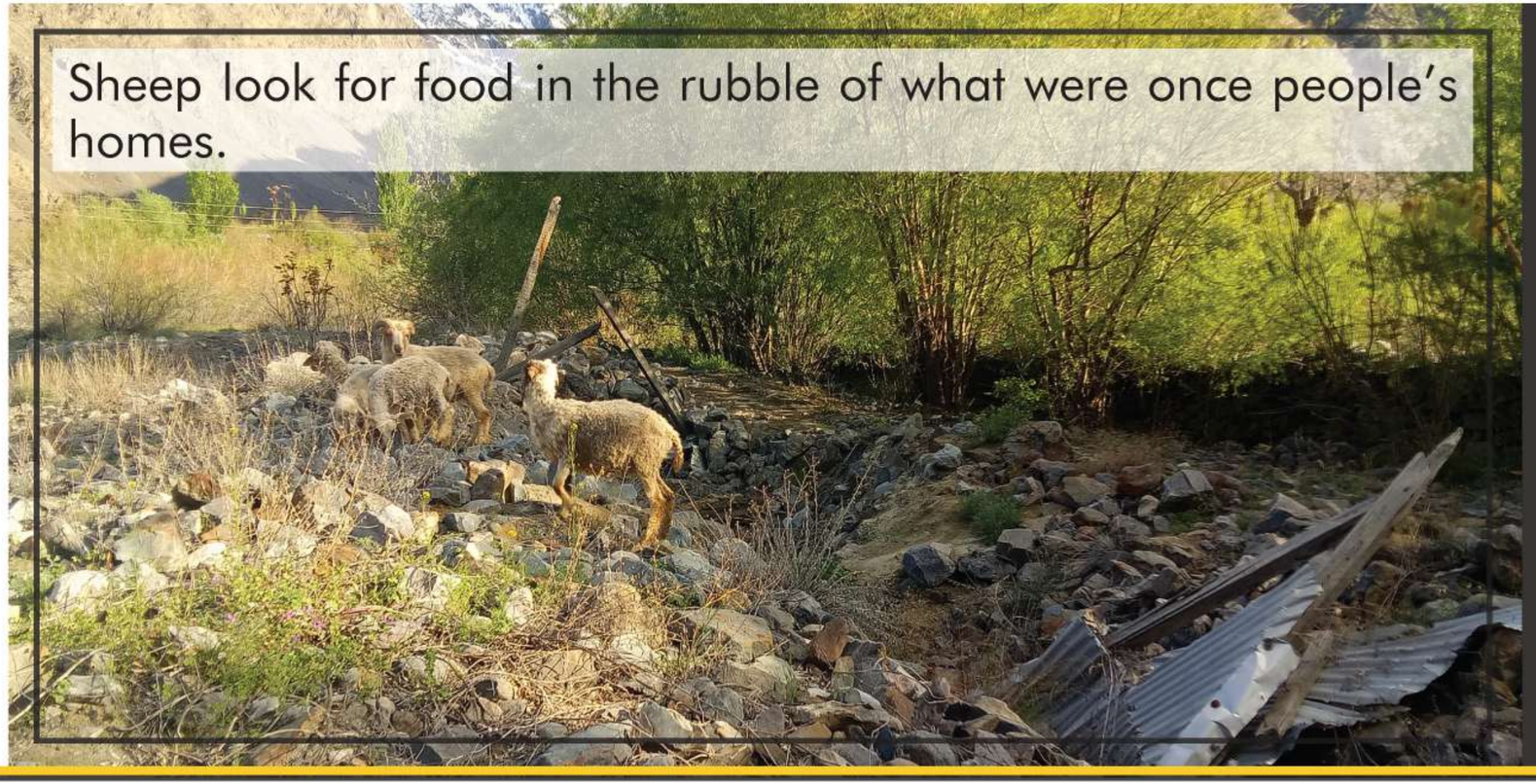
Sonoghar, Chitral

At first glance, the beauty of the Sonoghar Valley (Population: 3,315 people) in Chitral makes you feel as if you have stepped into a beautiful dream. It's only when you start talking to the people of Sonoghar that you realize how the valley is still reeling from the damage brought to it by a powerful flood in 2007.
Pictured are young boys of Sonoghar playing cricket as the evening sun shines upon the valley.

On 29th June, 2007 a glacier on the nearby Mountain Paul melted and caused a flood in Sonoghar. The magnitude of the water and the debris that it carried along with it was so large that it kept flowing for 96 consecutive hours. The flood swept away 110 houses as well as all cultivated farmlands. Signs of the devastation caused to homes are still amply visible here. Many families lost everything to the flood, so they haven't had the resources to rebuild their homes and clear the debris even 12 years after the calamity.

These village shops got completely covered in debris when the flood hit. People have tried their best to sweep back the debris as much as they could, but they haven't been able to reopen their shops owing to lack of resources.

Sheep look for food in the rubble of what were once people's homes.



"The walnut, oak and fruit trees that were thousands of years old have all gone now. The flood took them all away. We had so much water here. We used to have 43 streams flowing through Sonoghar, now there are only three left.

My house was the first one to go. Beyond my home, there used to be an empty stretch up till the glacier that was 15 kilometers away. So my family and I were the first ones to get affected by the flood.

The women of the entire village stayed at other relatives' homes after the flood, while we men and our boys lived in tents for two months." – *Sahib Faraz, a resident and community leader in Sonoghur*

"It's very frightening when a flood comes. Huge boulders come with it. When the rocks hit each other, they make a lot of noise. It's very scary," *Sahib Faraz describes.*

Since the 2007 flood, experts have told the people of Sonoghur to not populate this area and have directed them to instead plant trees here. But the government has neither given alternate land to people, nor money to build new houses from scratch in a new area. When asked if Sahib Faraz would like to relocate to another area if the government provided him with adequate help he replies in the affirmative, "Absolutely. Who wants to die?"

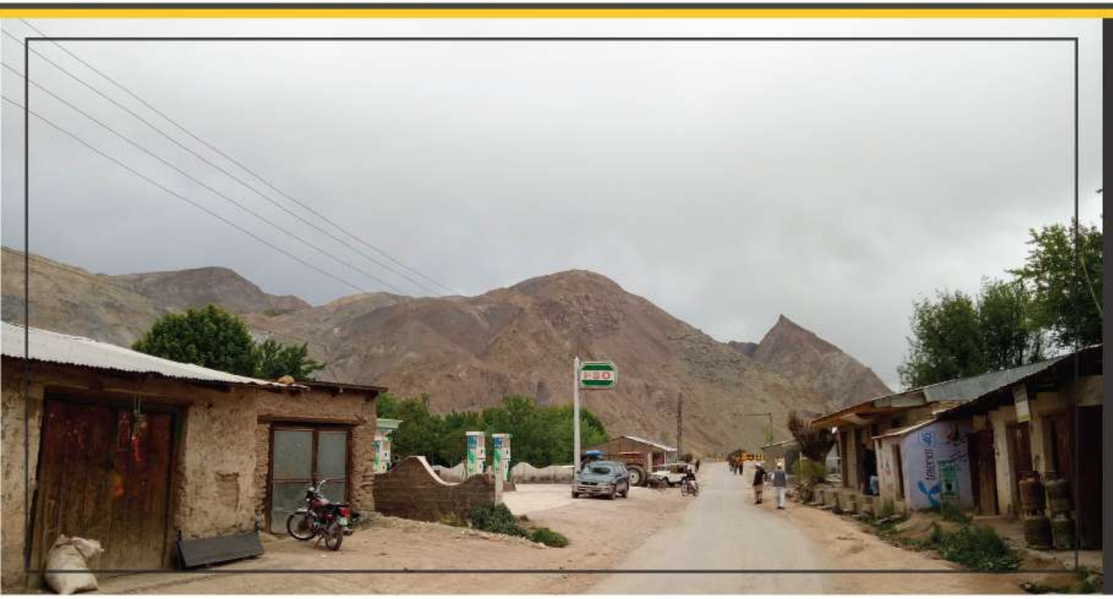
The house that Sahib Faraz lives in now is not the one that got destroyed by the flood. He was able to get a small house when his elder brother passed away and left inheritance money that was distributed among family members. Were it not for this inheritance money, Sahib Faraz and his family would still be homeless today.

Wheat, rice, durra, and maize were common crops here. Most of the cultivable land was swept away by the mammoth flood. Twelve years on, people are slowly going back to small-scale farming.

"Before this flood hit us, we were like kings. After 2007, there is no one as poor as us. We now know what it feels like to live under trees, and in tents and caves. In these past 12 years, we have gone 50 years backwards. A lifetime has passed." – *Sher Wali Khan, a resident of Sonoghur*

People in Sonoghar are nervous every summer now. They don't know when another flood will hit them and snatch away whatever they have been able to rebuild so far. "We just keep our documents always ready now. When a natural disaster strikes, you can't take all your belongings but you can take your important documents with you," *tells Sahib Faraz, a local resident.*
Debris and stones continue to lay almost everywhere in Sonoghur.

Reshun, Chitral



Reshun is a valley in Chitral, situated in the Khyber Pakhtunkhwa province of Pakistan. It's been hit by two floods in the recent past; one in 2013 and another, a much bigger one in 2015.

"You can tell when a flood is coming. You can feel the wind from far away. There is a horrible, echoing, mumbling sound that can be heard from a distance. It comes from the big boulders colliding with each other as they come rolling down with the massive force of the water traveling through the narrow valley. All you can think is "I am gone. My time has come. My life is meaningless. I will be swept away." You just keep on running up the mountain and you feel as if the water is following right behind you. The flood in 2013 was upon us in just 10 seconds. That is how fast a flood is." – *Sonia Kanwal, a banker and resident of Reshun Valley, Chitral.*

"When the flood had passed, that was when I realized all that we had lost. I used to look at this place and get very upset. It made me cry. Sometimes at the dastarkhwan(traditional mat spread on the floor to have meals), I would hear voices of people screaming about an approaching flood and I would scream and run away. I would also wake up in the middle of the night, screaming. A person is left mentally distraught after these floods. It is psychologically very disturbing.

Before the floods, all our family members used to live close to each other. My uncles' homes were near our home. All of us cousins would gather frequently and enjoy eachothers' company. Now, because our homes have been destroyed by the 2015 flood, we have all dispersed. We don't have the same community as before." – *Sonia Kanwal, a banker by training and resident of Reshun Valley, Chitral.*

People who live up in the mountains can tell early on that a flood is coming. They use a torchlight to warn people living down below. A lot of herders shift up on the mountains from June till September because there is more pasture for livestock there. From there, they shine a light down on the valley if they see a flood approaching. People downhill notice the light and know it's a flood warning.

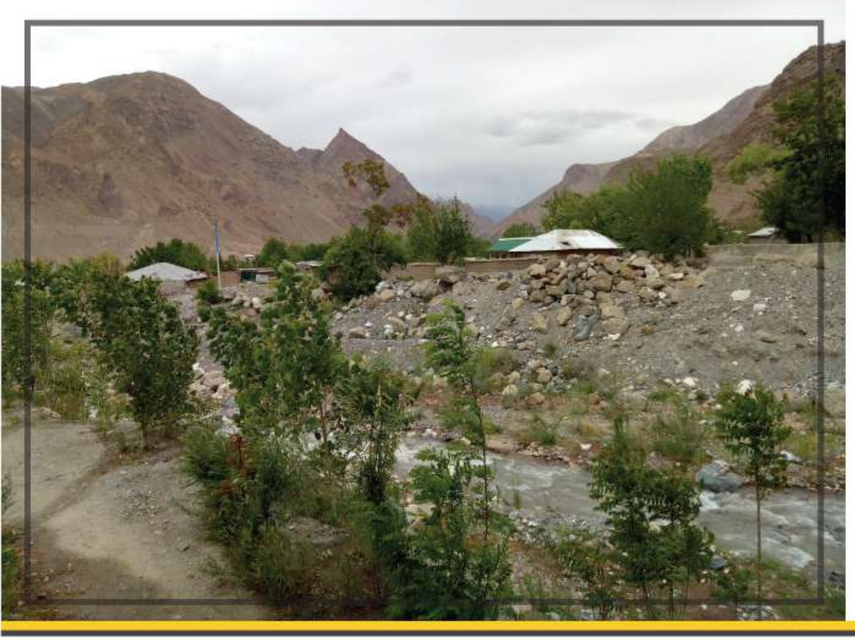
"There were trees on either side of this road before the flood hit. In this season (early May), it used to be blooming and looked as if it was a tunnel shaped by trees. It was quite beautiful." – *Sonia Kanwal, a banker and resident of Reshun Valley, Chitral.*

"We now live in a new area on the opposite side of the river where our home used to be it. This new area is also much lower down the valley. We call this new neighborhood 'Mutaassireen Colony' or Colony of Affectees" she jokingly says. "The size of our new house is the same, but we have lost all our agricultural land now. We used to grow wheat and corn before. Now we can't do that because the flood destroyed that land." – *Sonia Kanwal, a banker and resident of Reshun Valley, Chitral.*

"After the flood, the most difficult part was to rebuild a new home for ourselves. There are no paid labourers here and people often construct their own houses. My father was working abroad at the time so an uncle of mine was plastering the walls for our new house. I ended up helping him by bringing cement fin small pots, even though this work is not usually done by women. It was a very difficult time I have to say." – *Sonia Kanwal, a banker and resident of Reshun Valley, Chitral.*

"These floods are unlike the ones you see in the cities, where water accumulates up to a certain height in people's homes and then eventually starts receding. Here, it's not just water. It's rocks and sand and a brutal force that destroys everything in its path whether it is homes, cars, land - anything. I suffered through the floods of 2013 and 2015; it's 2019 now and I am still financially weak. I lost my entire home, guest rooms, cowpens and eight shops to this flood. I had to sell the fridge and washing machine as scrap. We lost all our clothes. I remember that the morning after the 2015 flood I had to take my family to a shop to buy them some shoes." – *Noorullah, a government school teacher and resident of Reshun Valley.*

After the 2015 flood in Reshun, the district government ensured that no reconstruction could be done within a hundred feet of the river bank. Prior to this restriction, people would immediately rebuild homes by the river bank since they are not provided with an alternate place to relocate to. A higher, more stable protection wall has now been built along the river.



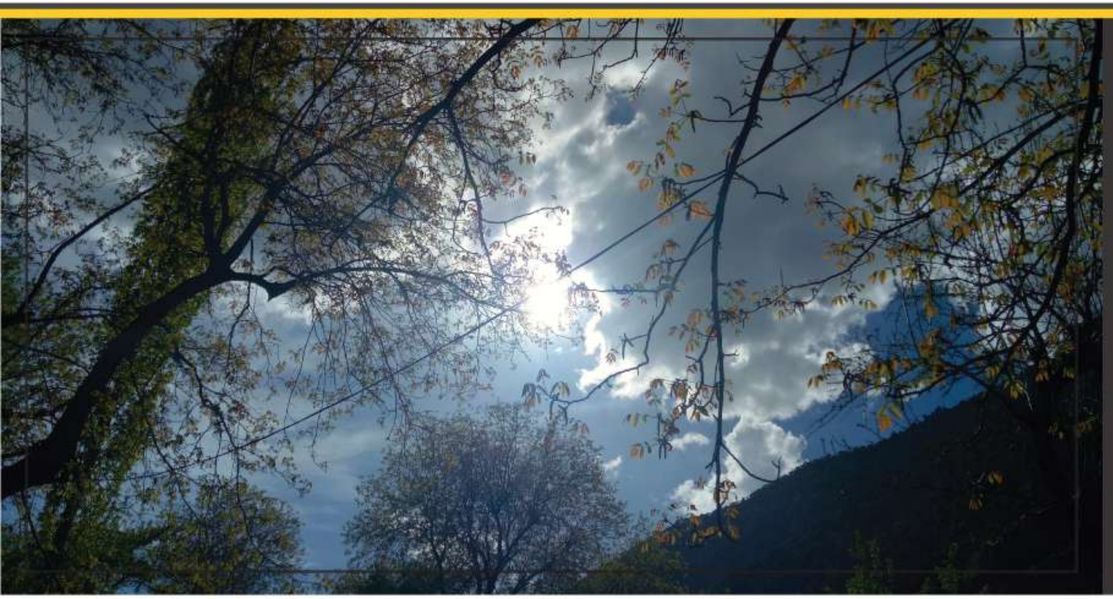
Since the old trees were ripped away by the flood, new trees have been planted along the river so they can bear the impact of the water and prevent it from over-flowing across the protection wall in case another flood hits Reshun.

"Reshun has been my home since I was a child. I can't just leave it, even if there is no early warning system for floods here." - *Imtiaz Ali Shah, a resident of Reshun Valley, Chitral*. In the 2015 flood, he lost one acre of land, two rooms in his house and had to replant everything on his remaining fields.

The power house in Reshun had a capacity of 4.2 MW that provided electricity to 20,000 consumers in upper and lower Chitral. It has been four years since the flood destroyed it. The new power plant constructed elsewhere has a limited capacity of only 200 KW that provides electricity to approximately 300-350 homes in small villages in Reshun. The operator of the powerhouse informed us that no efforts have been undertaken by the government to restore the powerhouse even though the basic infrastructure is there.

"When I was 10, I remember that a lot of people used to collect wood from the glacier above Reshun because there were a lot of trees there. By the time I was 30, I began hearing that the number of trees had decreased significantly. People cut them all to get firewood. Some people also started to sell firewood as a business. To this day, this area does not have a natural gas supply line so people naturally depend on firewood for heating and cooking – whether they fetch it themselves by cutting trees or buy it from a seller. I do know though that if we don't cut trees, it would help us in preventing floods. " – *Shahzada Munir, a farmer and Nazim of the Village Council, Reshun.*

People in Reshun have been witnessing changes in the weather since 2015. May and June would be months of very hot, dry weather but when we visited Reshun in early May it was still rainy and cloudy there and both locals and visitors were wearing winterwear. Before 2015, November to February months would be very cold months with plenty of snowfall. However, since the past few years, it hasn't even rained properly during the winter months.



We are now in one of the three Kailash valleys in Chitral- Bumburet valley, which is home to the Kailasha people.

Bumburet, Chitral

"About 10 to 15 years ago, it used to be very cold here. So cold that we could only grow one crop per season. Now it's warmer, and due to this there are more floods. But the heat has also been useful for us because now we can grow more fruit trees here such as pears, apples, walnuts and pine nuts. " – *Muhammad Wazir, a shopkeeper and resident of Pahlawanande Village, Bumburet Valley, Chitral.*

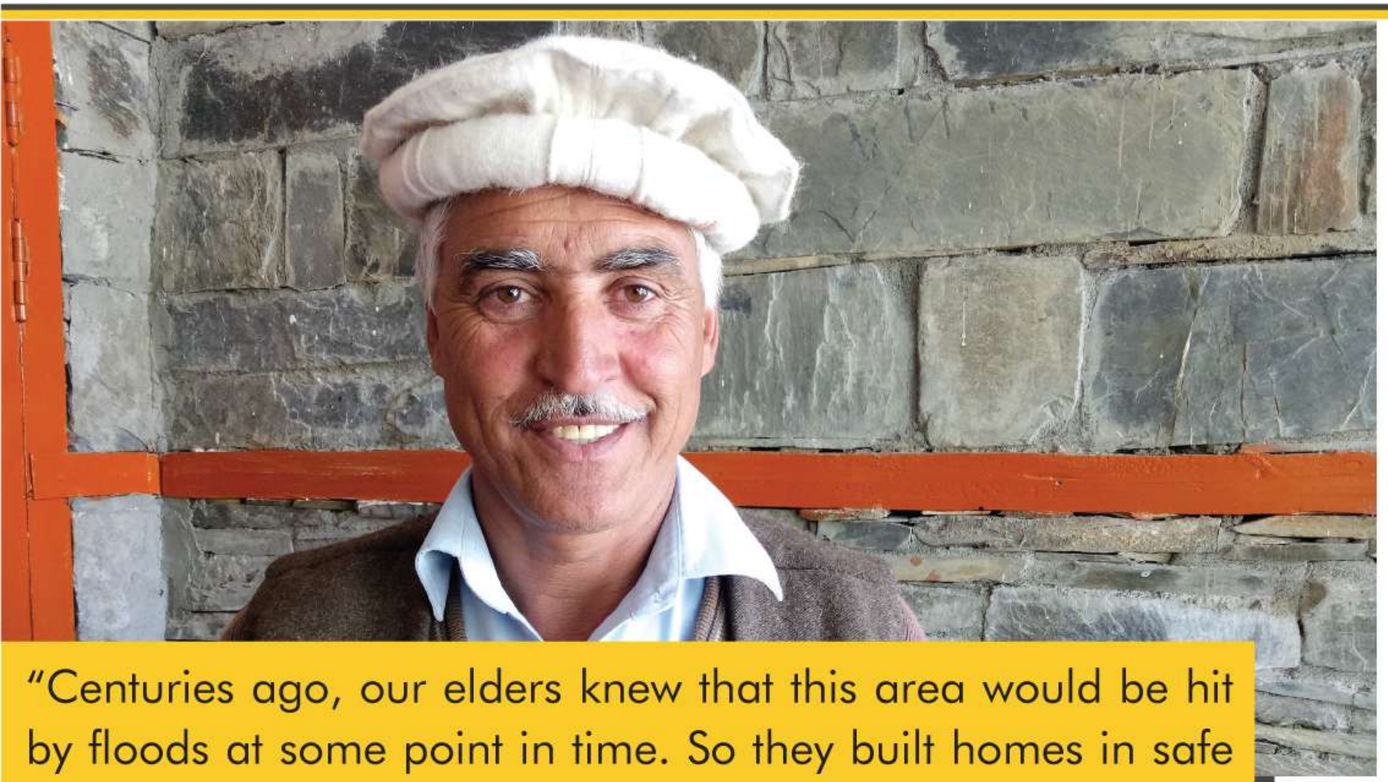
Bumburet was hit by a massive flood in 2015 and the signs of devastation are easily visible even in 2019. Pictured here is the Pakistan Tourism Development Corporation (PTDC) Motel in Bumburet which is located by the river and was hit by the flood. Eight out of its 16 rooms are still damaged and nonfunctional.

"I pray that we don't get rain in June, July and August. If it rains in these months, it creates problems for us. Rainfall in other months doesn't cause a flood here. I wish that the rain we get in these three summer months goes to our brothers in Thar instead." – *Hanif, Village Councillor and resident of Pahlawanande Village, Bumburet Valley, Chitral.*

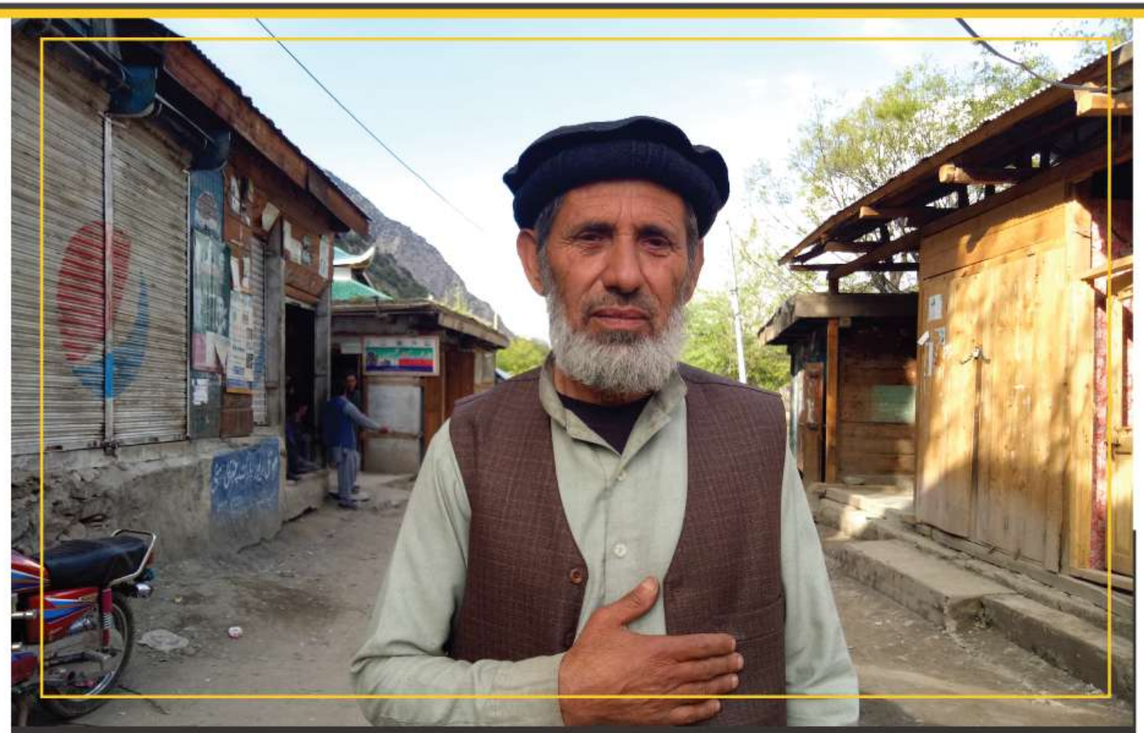
"Poverty is the biggest issue here. That is why people go and cut timber from the woods to sell, which is one reason why the weather changes. All of Chitral depends on wood for its energy needs because natural gas is not available and the electricity supply is not reliable. People need something to keep warm in the extreme cold weather.

Wood from the oak and cedar trees sells for between 400 to 800 rupees in Bumburet, but when our people sell it in Lower Chitral its price increases to 2,500 rupees." – *Tanveer Ahmed, a resident of Pahlawanande Village, Bumburet Valley, Chitral.*

"I was taught by my grandparents that if you cut a tree without reason or need, it calls out to God to seek protection from humans; and God hears the tree. They also taught me that if you cut a tree when it's so small that it can't even bear fruit, God will curse you." – *Meerkai, tribal head and resident of Anish Village, Bumburet Valley, Chitral.*



"Centuries ago, our elders knew that this area would be hit by floods at some point in time. So they built homes in safe places situated very high up in the mountains. They did have trouble taking things up to their houses, but they knew that they would face no trouble when the floods or rains came. People whose homes are not built in safe places have to leave their homes when it rains here in the summer. That's why I believe that people who had made houses high up were the best engineers of their time. They were definitely better engineers than us." – *Nazar Gill, resident of Anish Village, Bumburet Valley, Chitral.*



"My shop and agricultural land were completely destroyed by the flood. My house was slightly damaged but I had to migrate from my home of 40 years to a new village. The government authorities told us there's a high risk of flooding where I used to live so I am not supposed to rebuild my house there. They will compensate for my shop but not for my relocation.
I miss the walnut, grape and apricot trees in my home."
- Musharraf Khan, a shopkeeper a resident of Krakal Village, Bumburet Valley, Chitral. He migrated from Anish village.

Badswat, Gilgit

We are now in the Immit Valley, situated in Ghizer district of Gilgit Baltistan. On 17th July, 2018 two villages in Immit named Badswat and Bilhanz got completely decimated by a glacial outburst flood. As a result of a change in the direction of the flow of flood water, a new lake formed in the valley which ended up submerging an entire village under it.

Badswat, which was a village comprising 32 households now lies submerged beneath the new lake, whereas all of Bilhanz Bala village's 10 houses are still covered with debris, boulders, and sand brought downstream with the flowing flood water. The water has seeped away but the entire village continues to be buried in sand and huge boulders.

Unfortunately, since the valley is very remote, this massive natural disaster did not get considerable media coverage! The newly formed lake in Badswat submerges an entire village under it. Only the roofs of a handful of homes and buildings are visible.

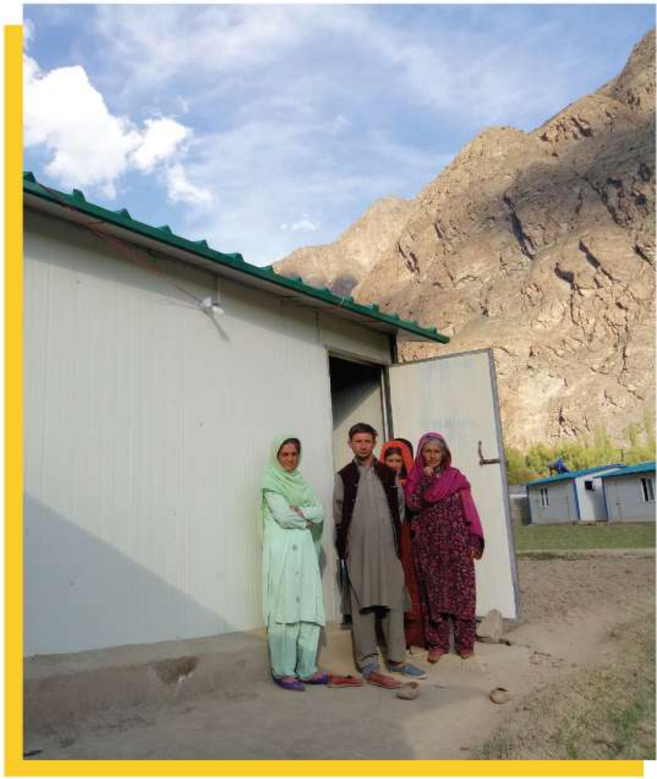
"The flood came at 5pm in the evening. One man from my village noticed that the river's flow had changed and water was gushing onto the land. Everyone left their homes, cattle, and agrarian lands behind and ran up the mountains to save their lives.

The flood came unannounced, and then continued for 14 days. We were given food supplies through airdrops from helicopters.

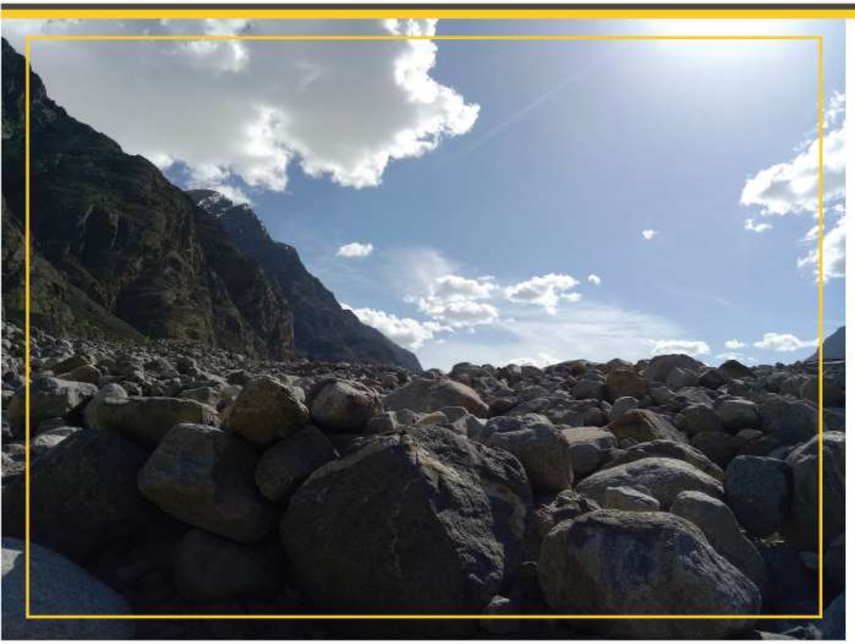
Before the disaster, people's living conditions were much better. We grew potatoes, wheat, vegetables and fruit on this land, ate it and sold it as well. We were better off. Now our lives are very difficult." – *Janaan Khan, former resident of Badswat village, Immit Valley, Ghizer.*

"After our homes were destroyed by the glacial outburst flood, we had to live in tents for months. Living with 8-10 people in one tent in the harsh November cold was the most difficult thing I had to do in my life.

In November 2018, an NGO provided us with these temporary shelter houses whereas the government gave every household PKR 60,000. In my village, I owned 30 kanals of land that could have easily been worth 1 crore rupees. And here, the government gave me PKR 60,000 as compensation for all my losses. I am very upset." – *Janaan Khan, pictured here with his family outside the temporary shelter given to him by a non profit organization.*



"Small floods used to come in my village every now and then. But what came last summer has never come before." – *Zulekha, former resident of Badswat village which is now submerged under a newly formed lake.*



Rocks and boulders lay everywhere along the route the flood water took, destroying everything that came in its way.

This is the route that the glacial flood took, eating away huge chunks of agricultural lands on its way.

"What did I see, you ask? I saw a flood. The lake's water did not reach my home, but it is completely buried in sand and rocks brought down by the flood. I can only see the roof of my house from here. I don't feel like returning to it. I am scared of the flood. What if it comes at night the next time? Then we will all die." – *Fida Ali, 14, former resident of Bilhanz Bala, Immit Valley, Ghizer.*

"I am sitting here in this shelter with nothing to do. I have no work. I am wasting my time. I miss toiling on our land. I miss my goats and my wheat, potato and corn crops." – *Aman Begum, a survivor of the Bilhanz and Badswat climate tragedy.*

Pictured here is the glacier which burst and flooded the area forming the lake and causing permanent damage to the Bilhanz Bala and Badswat villages in Immit Valley.

Hassanabad, Hunza

We are now in the Hassanabad village of Hunza Valley, situated in Gilgit Baltistan. The story of Hassanabad also marks our last story from this journey across Pakistan that has documented climate change narratives from people and places that are often left behind unreported and unheard.
Hassanabad is situated close to the Shishper glacier, and a major climate disaster is waiting to take place any time here.

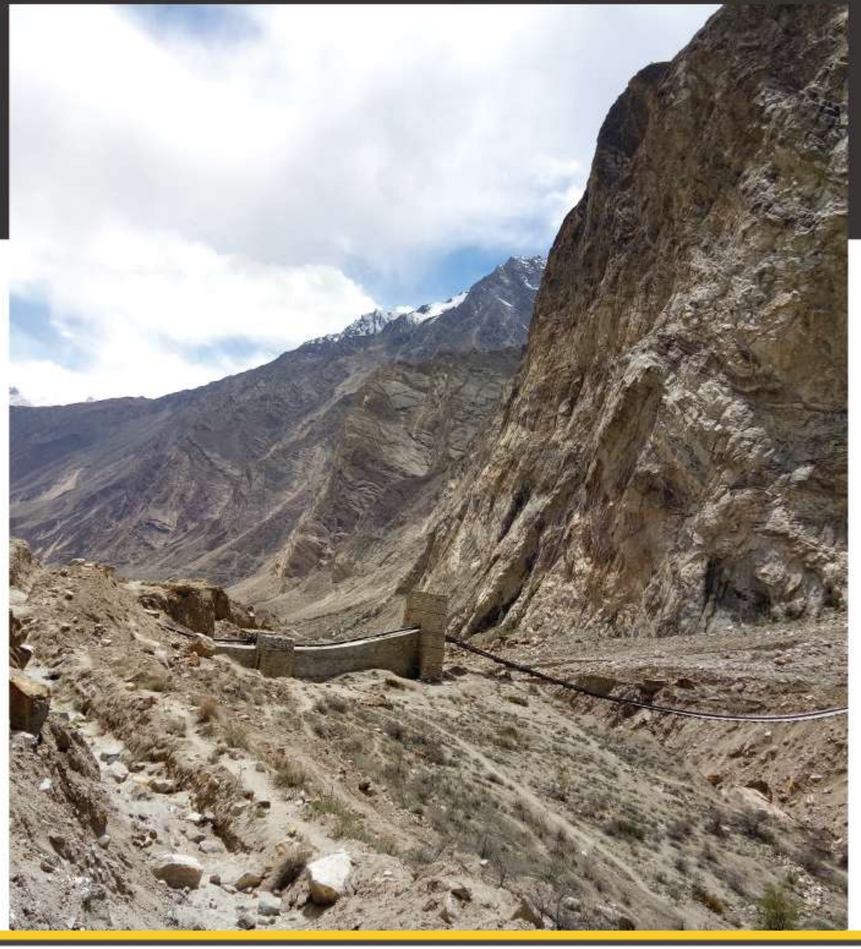
Two streams namely the Shishper stream and the Muchuar stream used to flow by Hassanabad village, providing water to various nearby towns and villages in the Hunza Valley.
Pictured here is the path the streams used to take.

In late 2018 at 4am on one night, the Shishper glacier suddenly changed its position and started advanced ahead rapidly. This unpredictable movement of the glacier blocked both the Shishper and Muchuar water channels. This blocked the water supply to Alyabad and also damaged a power station built nearby.

"In last Fall, the glacier advanced rapidly within a period 7-8 hours.After that itwas moving 5 to 6 feet forward every night. It still hasn't completely stopped advancing." – *Alam Jan, a local volunteer in Hassanabad .*

These photographs were taken in May, 2019 and we were told it is predicted that in a period of two months the glacier would move up to this bridge, posing a risk to infrastructure in the area, as well as to thousands of lives.

Not only is such fast movement of a glacier extremely risky for all nearby communities, but another factor that makes the situation in Hassanabad a truly terrifying one is that all the water of the two streams that is being blocked by the Shishper glacier has been accumulating behind it. This means that a lake is forming behind this huge body of ice, and if in case the glacier melts faster or bursts, the damage from the flood would be drastic. In November 2018, media reports claimed that the lake behind the glacier was already 300 feet long and 75 feet deep.



The blockage of both streams by the glacier has also resulted in water shortages for nearby towns like Alyabad. While stopping the movement of the Shishper glacier is not in anybody's control, resolving the water crisis in the area was a responsibility the local community members took upon themselves.

"A government representative visited the area after the disaster and saw how the water channels have been blocked by the glacier. He said to us that nothing can be done and it seems impossible to draw out the blocked water for people's use. So, I brought togethera group of young local volunteers to turn the impossible into possible. It's our 12th day of work here and all praise to God, this morning we were able to draw out the water blocked behind the glacier through pipes that we have been laying down ourselves." – *Imam Dad, a local elder and volunteer in Hassanabad.*

Imad Dad and his team at work in Hassanabad, trying to revive the blocked water channel.

The case of the rapid advancement of the Shishper glacier is a direct result of climate change in Gilgit Baltistan. With more environmentally unfriendly activities set to happen in the area in the near future due to the expansion of the China-Pakistan Economic Corridor (CPEC), Pakistan and Pakistanis will need to closely follow such incidents.

So much damage to lives has already taken place in Pakistan due to climate change, but this story is a reminder that the worst has yet to happen.

Bagrote Valley, Gilgit

We are in the Bagrote Valley of Gilgit, where a glacier near Diran Peak is slowly melting away. Up until 45 years ago, the glacier used to be 500 feet wider and 200 feet taller than what it is today.

Fortunately, there has been no flooding in connection with the glacier here so far. This is why the community in this valley continues to live very close to the glacier, without any sense of fear.

"I was born on a glacier. Why would I be scared of it? It is just frozen water!
We don't have floods here. They have never come here. We will also not be affected by the melting and receding of the glacier because the land left behind will be developed by us. The effects will be felt downstream in Gilgit and Punjab, where there will be less water available for people." – *Ghulam Raza, a resident of Bagrote Valley, Gilgit.*

Booni, Chitral

" We have been asked to paint over the tin sheets of our roofs as they reflect sunlight and heat directly onto the glacier nearby. So now we have started painting them white. " – *Imtiaz Alam, a resident of Booni, Chitral*

This is how most houses look in Chitral, with the roofs made from tin.

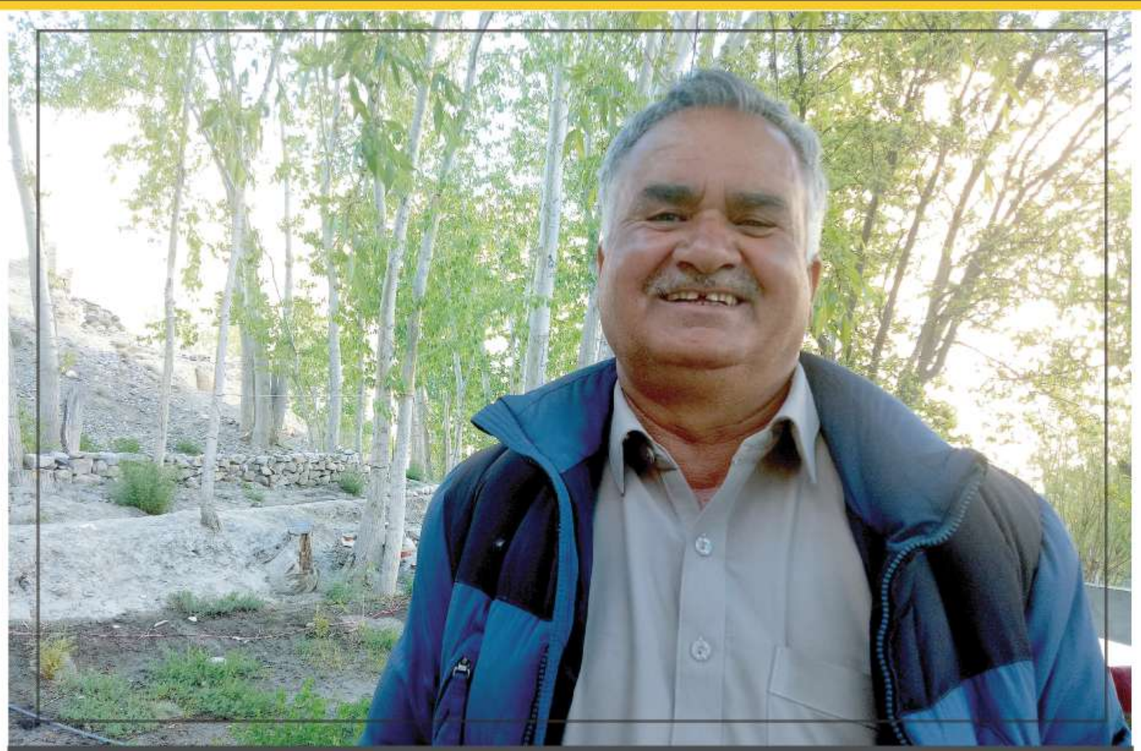
Karimabad, Hunza

We are in Karimabad, Hunza Valley where fruit orchards like these are a common sight. Karimabad has recently been witnessing a rise in temperatures during spring and summer time.

"Because of the increase in temperatures over the past 10 to 15 years, our apricots have started to get affected by insects. This happens because of sudden heat. The same thing happens to apples. They fall off trees ahead of time. And our fruits don't have the same taste anymore, and they don't ripen the same way." – *Sheri Bano, an organic farmer and the owner of Hidden Paradise Restaurant in Karimabad, and a resident of Altit village, Karimabad, Hunza Valley.*

Passu, Gojal Valley

We are in the village of Passu, Gojal Valley, which is situated in Upper Hunza. The Ghulkin glacier here is advancing at a very rapid pace, so much so that it has almost reached the side of the road connecting two villages.



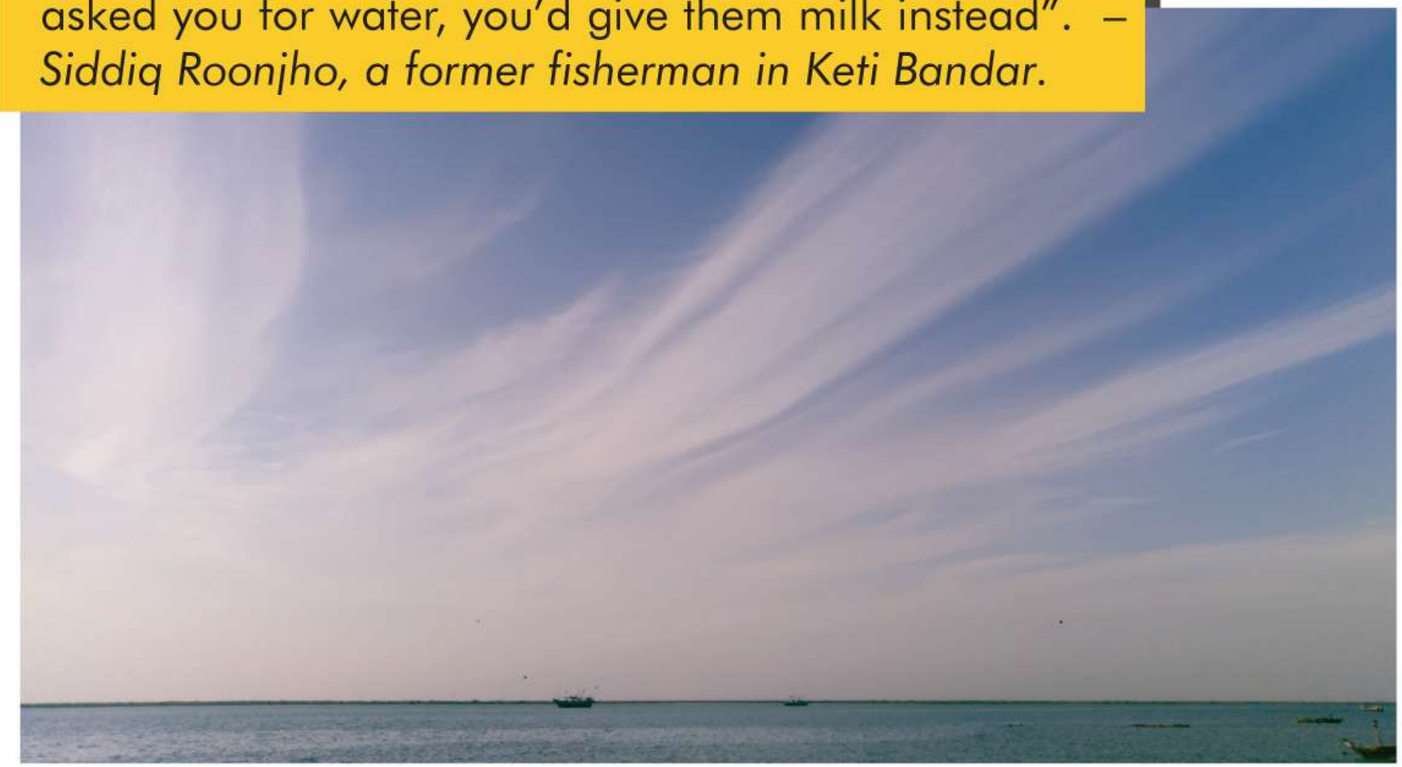
"Everyone is helpless in front of nature but everyone should have the knowledge vto minimize danger once a natural disaster strikes, or when it is about to occur." – *Amanullah Khan, a community volunteer in Passu.*
Amanullah has been working on relief & rescue operations in the area since the year 2000 and is a resident of Passu, Gojal Valley. He currently serves as the captain of the community emergency response team (CERT) formed by Aga Khan Agency for Habitat (AKAH) and oversees training and rescue efforts in 5 villages: Passu, Hussaini, Ghulkin, Gulmit and Shishkut.

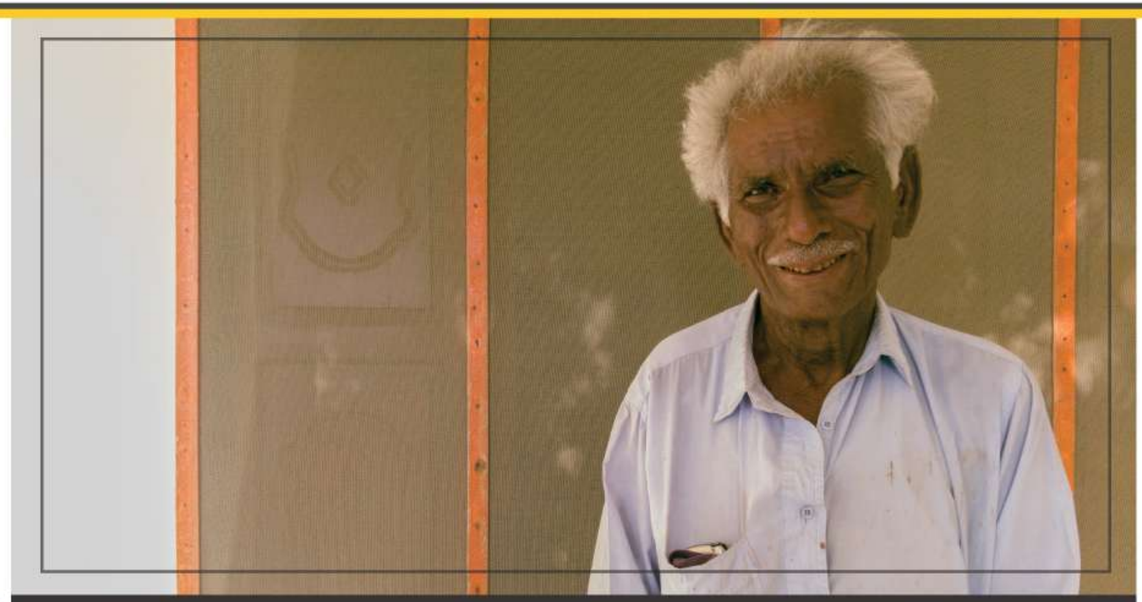
Coastal Areas

This section introduces and highlights some of the people affected by climate change in coastal areas of Pakistan and their stories

Keti Bandar, Sindh

Keti Bandar is situated in the Sindh province of Pakistan. It is part of the Indus delta. It once used to be a fertile land, with the water of the mighty Indus River irrigating its land. Rice used to grow everywhere in the area, so much so that all of Keti Bandar would smell of rice. The people were all so well to do that "if someone asked you for water, you'd give them milk instead". – *Siddiq Roonjho, a former fisherman in Keti Bandar.*



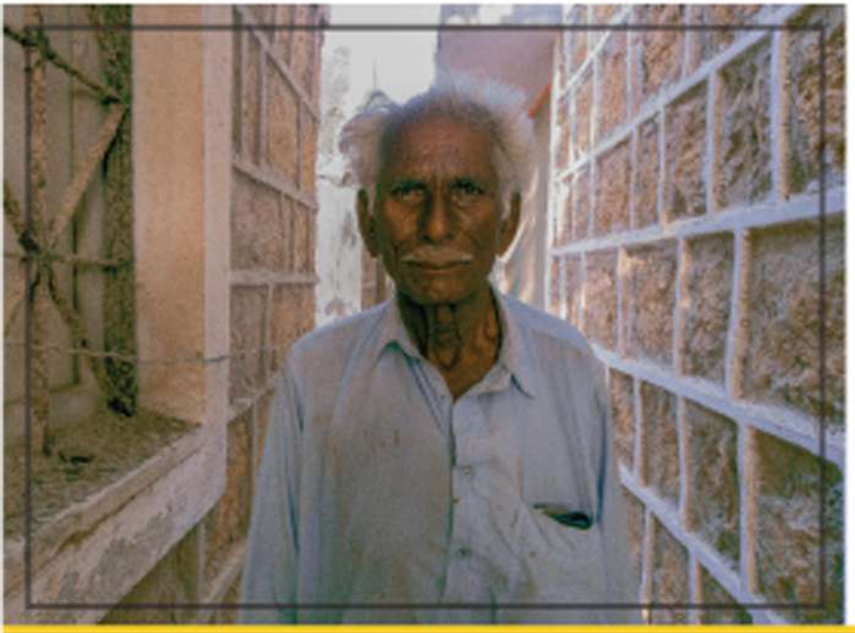


"I remember when I was very little, my father used to take me to Jamshoro where a new barrage was being built. He was working as a labourer there. He used to fill a boat with rocks, and then would row back into the center of the river and dispose off the rocks into the riverbed.

I witnessed the construction of the Kotri barrage with my own eyes, not knowing that we were constructing something that would result in losses for our own selves.

Until the time the barrage got built, agriculture was thriving in Keti Bandar. However, the dam was built upstream and the flow of fertile sediment downstream started to get blocked. Our soil was not rich anymore. When river water finished here, our crops were also finished." – *Siddiq Roonjho, a former fisherman in Keti Bandar*

The mangrove forests can be seen thriving in Keti Bandar, as a result of interventions by NGOs such as IUCN and WWF. In the past, their forests here were so dense that the fishermen used to identify different creeks by the thickness of mangrove cover. Mangroves are shrubs that grow along coastlines and possess a salt filtration system. They protect against cyclones and tsunamis, and fish and shrimp also find a home to grow in their roots system.



"When the crops were gone, all of us switched to fishing. The water was full of fish then. Each fisherman would catch 200-300 palla fish every day, and each piece would cost 7,000 rupees. Those were the days. Thinking about old times makes me cry." – Siddiq Roonjho, a former fisherman in Keti Bandar

Over the years, seawater intrusion took place at such a scale in Keti Bandar that big fish species such as palla and paaplate became scarce. There are only small fish left in the water now, which are not as profitable. Some people cut down the mangrove forests to sell wood and earn extra money. The construction of Sukkur and Ghulam Mohammad Barrages has reduced the flow of freshwater from the River Indus and this has impacted the growth of mangroves in the area.

Salt deposits on the soil are now a common sight in Keti Bandar, owing to the sea intrusion in the Indus Delta. The flow of the Indus River was drastically reduced in the deltaic region with the construction of barrages upstream in 1932, 1955, and 1962. This curtailed the flow of freshwater into the region and increased seawater intrusion.

"The sea is life for us. Without it, we are nothing. Fish such as palla, paaplate, siyarr and goli are hard to catch now. The smaller fish that are still caught frequently are boi, daathi, mangra and nuska. The big fish are dying because everyone uses the 'bhoola' net."
– Saifullah, resident of Keti Bandar

The bhoola net is a plastic net which has very small eyes. It catches young fish and prawns and is used by fishermen to achieve their daily fishing targets. Catching young fish damages entire underwater ecosystems. The bhoola net has been banned by the government, however its use goes unchecked along the coasts in Pakistan.

In light of low fish produce, a recent intervention to sustain the livelihoods of fishermen has been the introduction of crab farming initiatives by non-governmental organizations.

Another intervention has been the plantation of more mangrove plants. Because of sea intrusion at Keti Bandar, storms are an ever-existent threat. Mangroves protect everyone against them.

Kakapir, Sindh

This story takes us to Kakapir- a small fishing village on the coastal belt of Karachi. Even though the village lies so close to the Arabian Sea, getting clean drinking water is a major issue here. Every morning, the women of Kakapir village gather at the water filling station to get

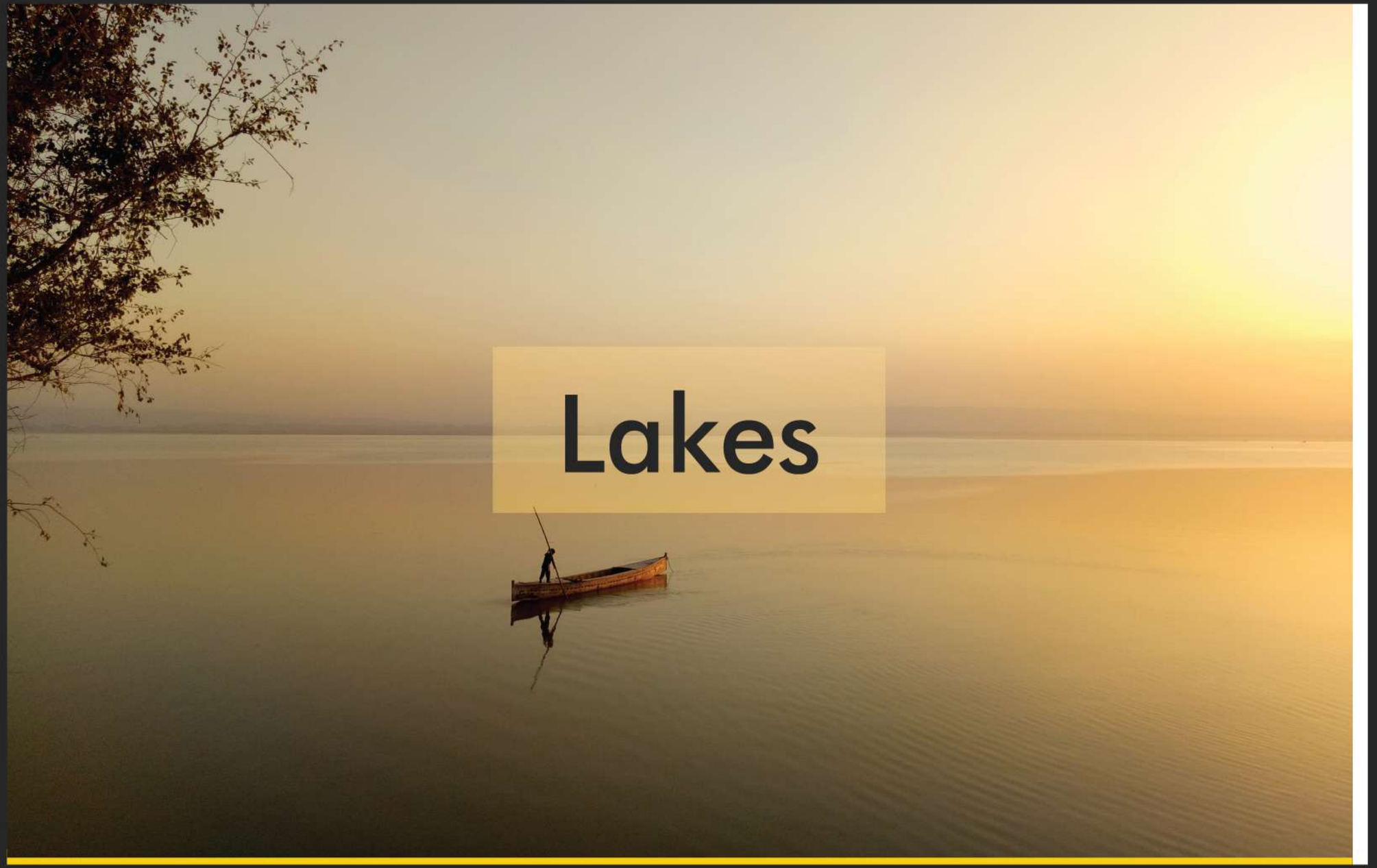
this is Fayyaz looking at the crab basket while in the background the fishermen haul a boat back to the shore. Young boys, like him, come to the jetty to help with fishing instead of going to school. Attending school regularly is a luxury few can afford, especially these days when the fish catch is low and the weather conditions harsh and unpredictable.

Repairing the Fishnet by knitting it with a plastic thread is a process that takes place after every catch. This man sits here and knits happily on a stormy day in Karachi.

These women come here every morning to get their supply of sweet water, no matter the weather! It is the village custom that women must fetch the water required for daily use in their homes.

Meet Rashida, she walks a long distance every day with great energy to fill 6 gallons of freshwater from the tanks at the mid-point of their community.

The jetty is the place where all the fishing boats are kept. This is where the fishermen meet in the morning to head out to the sea together and return to after catching fish.



Lakes

This section introduces and highlights some of the people affected by climate change in lakes of Pakistan and their stories

Lake Manchar, Sindh

Thousands of acres of once fertile land have now gone barren. About 40 varieties of indigenous fish have disappeared from Manchar lake. In the early 1990s, around 80,000 people used to live close to the lake. Now, only 20,000 to 30,000 people live here. People have been forced to migrate to other coastal areas in Sindh and Balochistan in search ofwork and clean water. Manchar was the largest freshwater lake in the country, but now the situation is such that people living around it have to buy drinking water.

The water levels in the lake have become abysmally low owing to no rainfall because of climate change.

"The last time it properly rained during the monsoon season here was in 2011. Since then, there has hardly been any rainfall. When it used to rain here, the water from rainwater channels along the Kirthar Range would flow into Lake Manchar and add clean water to it. Now nothing like that happens because there is no rain. We have left it all up to God now." – *Irfan Ali Lakho, a local activist and resident of Manchar.*

We met with migrants of Manchar who had relocated to other parts of Sindh in search of a better life. "I had to leave my land, my Manchar, because there was no fish left in the water. My children were faced with hunger. No one around me stopped me from migrating to Badin because there were no means of earning left back home. I left for Badin in 1997 where today I earn between 10,000 to 20,000 rupees a month. If things get better in Manchar, of course I will return home." *Mubarak Ali, fisherman (Third from left in this photograph).*

This section introduces and highlights some of the people affected by climate change in desert and plains of Pakistan and their stories

Nagarparkar, Sindh

Our next destination is Nagarparkar, a town just 16 kilometers away from the Indian border. Nagarparkar is part of the Thar desert, and is situated at the base of the rocky Karoonjhar Hills. The climate in Nagarparkar is hot, and any cultivation that takes place is dependent on rain.

Traveling through Nagarparkar, one realizes how severe the impact of unavailability of water and lack of rains on life can be. Rains have become more erratic in the recent years because of climate change and people are suffering the consequences.

Numerous wells across Nagarparkar have dried up, such as this one in the photo.

At least 5 Union Councils (smaller administrative areas within a city) in Nagarparkar do not have access to drinking water due to extremely low groundwater levels. In these UCs, water is available at as low as 300 to 400 feet below the ground.

Collecting water from the remaining functioning wells and then carrying it back home in the 42 degrees Celsius heat is a struggle every day; but a struggle that must be undertaken to survive.

Anwar Ali had been waiting for his turn to collect water from the well since 7 AM. His turn came after 3 PM. He told us that the water in the well is so low that he had to haul up at least 4-5 buckets to fill up just one.

In areas where there is water, irrigation is possible. People here cultivate cluster bean, green gram, pearl millet, sorghum millet and onions. Pictured in this image is a thriving onion crop in Nagarparkar.

In the areas where there is no water and fetching water from long distances is not possible, a new water tanker business has emerged to fulfill the need. Households resort to buying water from water tanker such as this one for as much as Rs. 3000 (~19 USD).

Vegetation is in danger in Nagarparkar not just because of rising temperatures, but also because of the harmful practices carried out by people.
The native tree of 'kandi' is gradually dying. One 'kandi' tree feeds eight goats for an entire year if its leaves are hand-plucked in the traditional way. However, younger shepherds prefer to cut down entire branches off the tree instead of only plucking leaves. This leads to the tree drying up and eventually dying off.

Rearing livestock is the main source of livelihood for people in Nagarparkar. The effects of climate change like increased heat stress, lack of rains and water scarcity have put their livelihoods in jeopardy.

Extreme heat, low supplies of drinking water, and dry spells owing to lack of rains mean that the animals are dying in large numbers due to thirst and hunger in Nagarparkar.

A somewhat unsuccessful intervention in the area has been the construction of dams to conserve rainwater. For instance, this dam has been built with such poor planning that the rainwater runoff flows alongside the exterior wall of the dam, missing its intended target by about 20-30 feet.

As a result of poor planning and lack of local consultation, the only purpose this dam in Karoonjhar serves now is that children use it as a cricket pitch to play on.

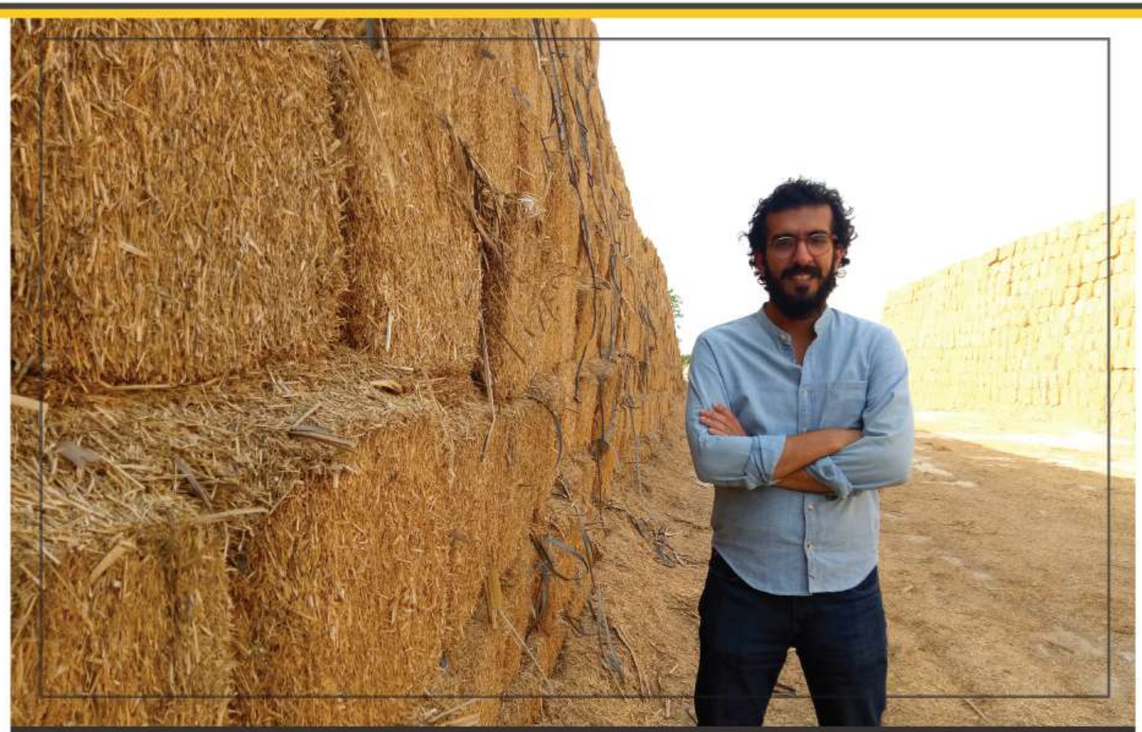
"Your eyes would well up if you saw how much water goes to waste here when it rains," *says local journalist Saleem Khoso*. He is of the opinion that if this rainwater runoff could be managed and stored, the water scarcity crisis in Thar could be solved.

Okara, Punjab

We are now in Punjab- Pakistan's largest province in terms of population. Punjab ishome to rich agricultural and industrial resources. Over the past three years, winter in Punjab has arrived with an environmental problem never before seen. Cities such as Lahore, Sahiwal and Okara have witnessed intense levels of smog- a phenomenon which occurs when smoke and fog in the atmosphere mix together to form a dense, grey layer in the sky.

In Punjab, this has led to rail and road traffic delays as well as a rise in reported health issues such as breathing problems, asthma, and lung tissue damage. Pollutants introduced into the air by industries and the burning of agricultural waste are considered to be some of the major causes of smog formation.

Every winter after the cotton harvest season, farmers in Punjab burn agricultural waste left behind to quickly make way for sowing wheat on the same land. This contributes to massive air pollution, and eventually smog.



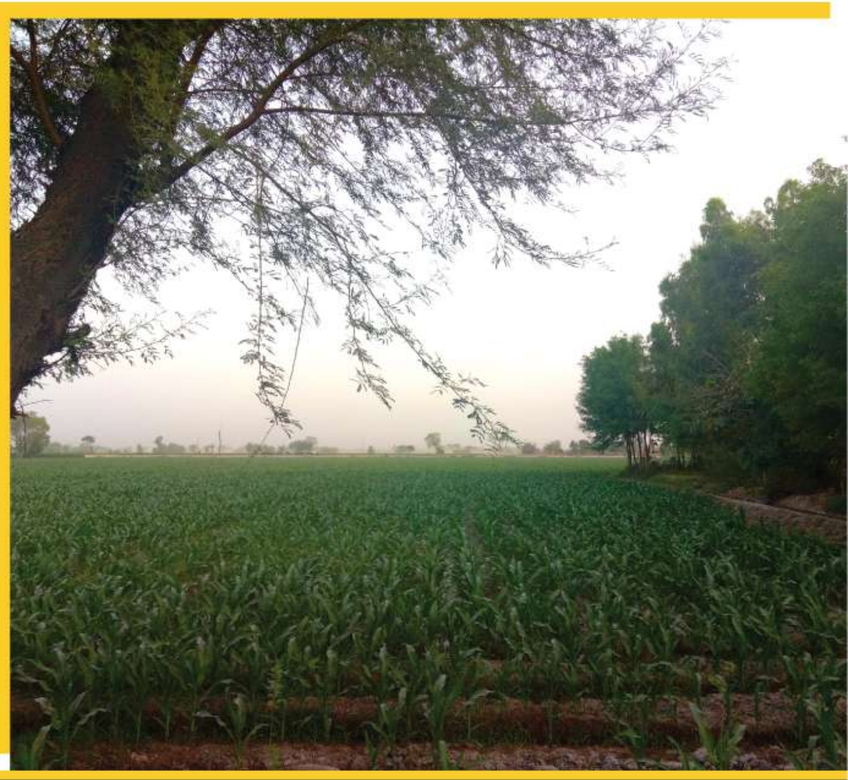
Thankfully, there are people striving to tackle Punjab's smog problem in innovative ways. *Hasan Anwer is the CEO and Founder of EnMass Energy, of BioPro.* His company's primary work is to collect biomass such as cotton waste and corn stalks from landless farmers and use the collected biomass for power generation. His work contributes in two meaningful ways: it directly helps in reducing smog in Punjab because farmers working with EnMass Energy no longer burn agricultural waste, and it makes farmers financially more stable because they can now sell their agricultural 'waste' to Hasan.

We asked Hasan about the background story and motivation for starting "EnMass Energy" and this is what he told us. "A few years back, I was working in Toba Tek Singh, Punjab where I met a loader who was helping me with my luggage. After the trip I handed him a note of PKR 1,000, as a tip he told me that he had never held a thousand rupee note before, because he had been a landless farmer all his life. This shocked me." recalls Hasan. In many parts of Punjab people neither have the land nor the money to rent land to farm. "So they work as seasonal farm labourers who keep moving from one district to the next. And they don't get paid in cash. They get paid in a share of the crop, which is sometimes only enough to last them a week. Or they might get paid in terms of leftover agricultural waste. They use some of it for domestic purposes such as burning, cooking and heating. While the rest has no economic value for them. So, they either burn it or leave it on the side of the road," he explained.

Hasan decided to convert this waste into cash for these farmers. Little did he know at the time that the smog crisis would also soon erupt in Punjab, and that his intervention would target two problems at the same time.

The corn bales are made with the help of a machine and transported to industries via trucks, where they can be used for energy production.

One of the farms where Hasan's EnMass Energy operates is in District Okara. Okara is a district situated in the Punjab province and is known for its agricultural produce. Wheat, potatoes and maize grow in abundance here. Okara is also known as the 'Home of Maize'.



Chaudhry Adeel Khan is a landowning farmer in Depalpur, a town in District Okara. He has recently witnessed drastic changes in the weather here. "When I was young a sandstorm would hit our area every September, announcing the arrival of winter. Everyone used to call it "taandabhand" in Punjabi. Nowadays this sandstorm comes to us in mid November every year meaning that our winters come much later, and daytime temperatures in October have gone up to 40 degrees Celsius. As a farmer I find these new weather patterns very alarming because everything in agriculture depends on the weather and timing," explains Adeel.

Up until a decade ago, April used to be a time of joy; a time when everyone in and around farms celebrated the harvest of the wheat crop. The wheat crop requires dry and hot weather before it can be completely ready for harvest. Historically, wheat harvest season used to fall in April every year.

Our team visited Depalpur in April 2019, and saw huge patches of a nearly ready-to-harvest wheat crop damaged due to heavy rains. It rained three times in Depalpur in April this year.

In Punjab there is a saying rooted in indigenous wisdom that reflects the importance of the right weather during wheat harvest season. It says, "Never ask for rain in April from God. Even if it's pouring gold, never pray for rain."

Shafiq Ahmed works as a farm labourer at Chaudhry Adeel Khan's farmlands in Depalpur. Even though climate change impacts him, he doesn't have the time, awareness or resources to reflect upon these new weather changes due to the hard work he has to do in the field every day. "I just work from season to season, regardless of whether a season gets longer or shorter. When it's winter, all I worry about is being able to spend the winter in peace. When it's summer, I just want to make sure that I am able to survive through the season," explains Shafiq.

Rural Areas

This section introduces and highlights some of the people affected by climate change in **rural** areas of Pakistan and their stories

Jamshoro, Sindh

Our next story takes you to the fields of Jamshoro, a city located on the west bank of the River Indus in the province of Sindh. The main crops that are grown in its fields are wheat and mustard. Featured in this photo are farm labourers who are helping with harvesting wheat. They all get small bags of wheat to take home as compensation for the day.

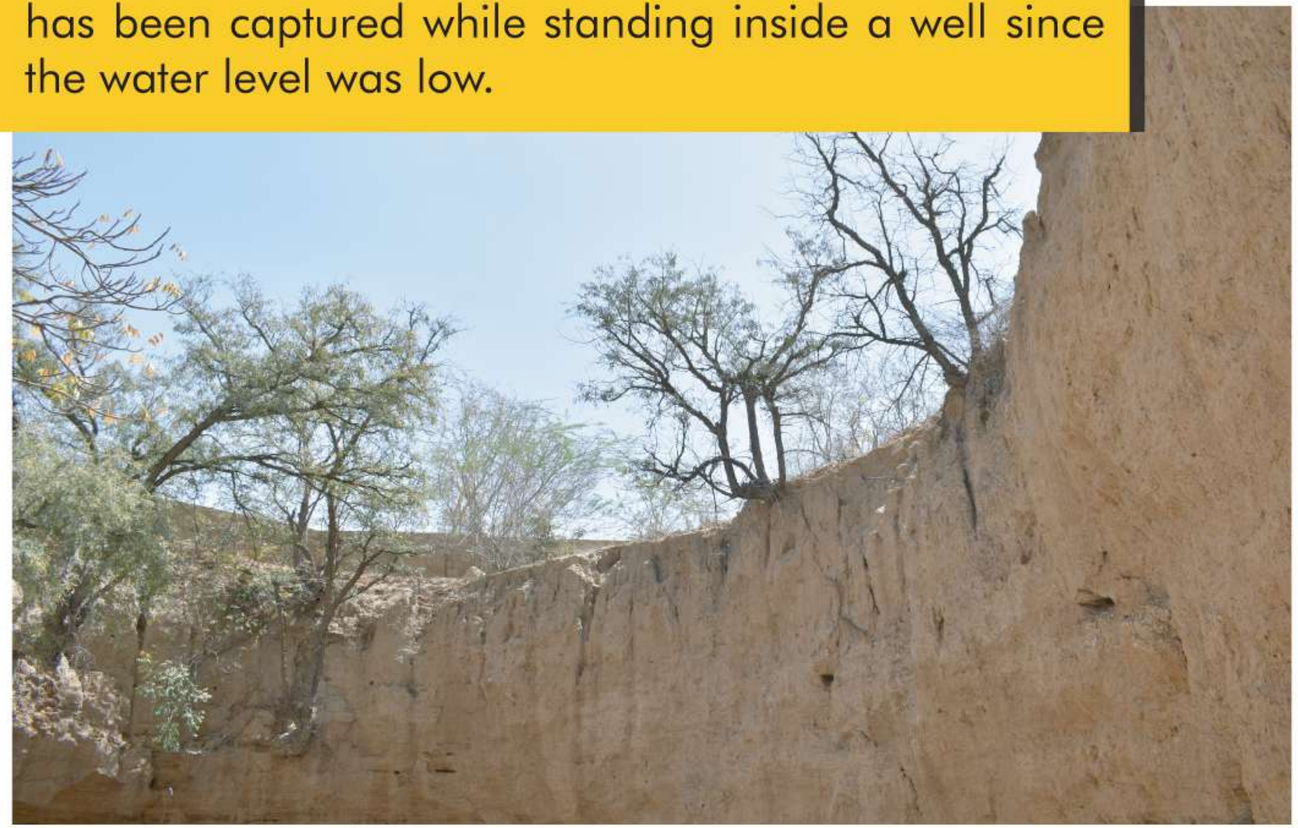
When winter used to last longer, the farmers were able to produce 2400 to 2800 kg per acre of the crop. However, due to the change in weather patterns over the past few years, winters have shortened, resulting in a decrease in crop yield to only about 800 kg per acre.

Most of the village men and women work as seasonal farm labourers in Jamshoro. They get employed during the harvesting season and get paid in wheat instead of cash. Here are Bhumbi, Khoobsurat and Nazeera happily working in the fields.

Like many other parts of Pakistan, Jamshoro has also been witnessing unexpected rain patterns recently. Previously, seasonal rainfall patterns allowed farmers to plant seeds and grow crops at specific times of the year. However, now in the absence of set rain patterns, farmers face difficulty as sudden rain often destroys crops right before harvest.

Gadap Town, Karachi

The water level in the traditional wells of Gadap Town of Karachi has severely decreased due to the absence of rainfall. Previously these wells were filled up with water till the edges, but now water can only be obtained by costly water pumping methods. This photo has been captured while standing inside a well since the water level was low.



We are in Karachi now which is the largest city of Pakistan, located in the province of Sindh. Karachi is a combination of urban and rural areas, which both get affected due to climate change. Gadap Town is situated in the northwestern part of Karachi and is considered one of the rural areas. After the city experienced a major drought from 2014 to 2017, the rainfed dams, such as the Thaddo Dam in Gadap Town completely dried up. Earlier, these dams used to refresh water channels of nearby areas, providing people with an ample supply of water. However, since the drought, the dams have become completely parched.

For more information, please reach out to us:

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Sincerely,
Climate Stories Pakistan Team