Paper on Water Resources of Kachho
&
Future Situation in the Context of Climate Change

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Abbreviations

FGD	Focus Group Discussions
SSO	Sujag Sansar Organization
CEO	Chief Executive Officer
FP Band	Flood Protection Band
FGHR	Fund for Global Human Rights
NGOs	Non Governmental Organizations
CBOs	Community Based Organizations
RO Plants	A reverse osmosis plant
MNV	Main Nara Valley
UC	Union Council
INGOs	International Non Governmental Organizations
AF	Acre Feet
MW	Mega Watt
WAPDA	Water and Power Development Authority
TR Khan	Tando Rahim Khan
Ghandha	soil erection to check the flow of water in kachho
KMs	Kilo Meters
EIA	Environment Impact Report

Key words

Wah	natural or manmade water course
Packa wells	the wells made from backed bricks
Kumbs	natural stream where water flows from the mountains or earth naturally and flows all the season
Sabeels	arrangement of drinking water for travelers besides roads and devotes at shrines
Teer Bhit	the strong cemented and stone pitched wall constructed by Britain's in 1932 to divert water of Nai Gaj

Authors note:

Author belonging to the area and havening good knowledge of water recourses has been working in Sujag Sansar organization, and has been engaged in awareness and advocacy on water issues. The author also writes in leading English dailies on water issues. This study has been conducted with the support of Sujag Sansar organization. I am thankful to Mr Mashooque Birahmani, CEO, SSO who helped immensely in providing logistic support in field and accompanied to provide guidance and facilitated in conducting individual interviews with key persons and FGDs. Mr Babar Birahmani and Mr Gafoor Jamali from Sujag Sansar organization also accompanied and helped in photography and facilitated in indentifying key persons for interviews and FGDs, helped in contacting and calling them and making arrangements of the meetings. Mr Fatah Dahri, a local grower and expert on local water issues also provided insightful guidance and agreed to give his precious time for interview on historical perspective. Mr Riaz Ahmed Brohi also helped in compiling data and reading proof. I am thankful for all above persons, particularly Sujag Sansar Organization for their support.

Regards

Gulsher Panhwer

Abstract

Sujag Sansar organization is working on water rights and water issues in Kachho area of Dadu District in Sindh since 2010. The kachho area in Taluka Johi, Dadu District, a rain and torrential steams dependent area, once rich in wild life and natural water sources in past, is facing situation of fast depleting of water resources. Unchecked deforestation, usage of Submersible pumps and indifference of concerned stakeholders are major causes for depleting water resources which affect livelihood and environment of the area. The purpose of the study is to dwell deeply in history of the water resources and abrupt changes in climate, and environmental degradation resulting in decrease and depleting in water resources and increasing spells of drought and what can be done to rectify the situation. The mythology adopted included Surfing internet, reports as secondary data. Author with the help of SSO team also visited field, conducted interviews and FGD with key persons belonging to different field of life. Results of the study are that deforestation; Submersible pumps caused the present state of affairs. There is need to check the practice of chopping of trees, restrict the number and duration of more than 2000 summer tube wells, construct small cemented barriers and smaller dams for staying of the rain and torrential streams water for longer time to help recharging of underground water, land erosion as well as help in restoring flora and fauna.

4. Introduction of Area

Kachho area starts from the western side of District Kamber-Shahdadkot (part of old District Larkano) and reaches touches Dano Bulla Khan in the south. As it sits in the "lap" of "Khirthar "mountain range. kachh in sindhi means lap therefore the area is called kachho. The word "Kheerthar" is also a fascinating word having the meaning of "Cream of the Milk. Kachho is also called non barrage area of Taluka Johi of Dadu District because it is separated from barrages area through FP Band

The population of Kachho area of Taluka Johi under study is more than 100,000. The climate of the area is extremely hot in summer and cold enough in winter. The average annual rainfall in the district is about 120 millimeters. The livelihood of the majority of the people is rain fed agriculture and livestock. The area is natural disaster prone. Either it remains in constant drought or floods causes' damage to meager assets and normal life the people.

5. Introduction of Sujag Sansar organization and its work on water issue

Sujag Sansar literally means **"awakening the world", e**stablished and registered in January 2005 under Societies Act XXI of 1860. SSO is a right-based development organization working for the marginalized segments of society in most backward areas of Dadu District of Sindh. The organization is joint effort of persons & energetic youth, well experienced in human rights and political activism and with a burning desire to bring positive change in the society. SSO fully realizes the importance of culture in bringing about social change & struggles besides promoting culture and Sufism to empower powerless through participatory approach. SSO is focusing in its work in District Dadu on girls' education, human rights, health awareness, environment, theater play, media advocacy and emergency response.

Taluka Johi is one of the backward areas of District Dadu, Sindh Province, Pakistan. As safe drinking water is the basic right of human but it remained very important issue since long. Keeping in view the violation of this basic right SSO with the joint efforts of FGHR started the project in Taluka Johi, to aware the communities on this very crucial issue of the area. SSO's advocacy campaign on water issue with the government department and key stakeholders created a healthy ownership among the communities for raising their voice for providence of safe drinking water and resultantly new water supply schemes were started in far flung areas and functionalized some dysfunctional water supply schemes in the projected areas. Sujag Sansar has been using the very effective and interesting tool like theater and songs to create awareness and do advocacy on water issue. Now the theater is being adopted by good number local NGOs and CBOs for rising awareness as due to low literacy rate in rural majority of rural population understand the simple language in a story telling way in theater.

SSO also worked against environmental degradation by presenting awareness theaters in kachho areas against ruthless deforestation and launched reforestation campaigns by planting trees in government and non governmental institutions. SSO also raised voice against hunting of rare spices of birds and wild animals in media and on different forums.

6. Traditional/natural Water resources

6.1 Torrential streams

Nai Gaj also called Gaj River by writer Aziz Kingrani, flows from the Kirthar mountain range to the sandy area of Kachho. The Nai Gaj is life line of kachho and Manchar Lake. In his article published in dawn of August 26, 2014, Aiziz Kingrani writes "in ancient times, River Gaaj poured into a big branch of Indus River near the Kirthar range, which used to run from the present-day Bakhar (Bhakar), through the present-day Kandhkot, Kashmor, Shahdadkot, Qamber, Larkano and Dadu to Manchhar. As a result, Lake Manchhar appeared on the landscape. When the Indus River changed its course, this branch dried up. Later, the Gaaj River used to run directly to the River Indus and irrigate the nearby villages of Paat Sharif and Khaat in Dadu district. The British dug the western Nara Canal for irrigation purposes and the Gaaj drained there. In 1932, when the Johi barrage was constructed, the flow of the River Gaaj was diverted through Nai Shole (Sole) to Manchhar Lake"

Apart from mighty Nai Gaj there are, 6 other rain feed torrential streams which are other main source for irrigation, drinking and meet need of animals as well as causes flourishing of flora and fauna in the area. During monsoon, Mighty Nai Gaj inundates both its banks. And other torrential stream i.e. Naing Nai, Angai Nai, Taki Nai, Nali Nai, Shori Nai and Gar Nai inundate large parts of kachho and also refill the Asai;s largest fresh water lake Manchar which has been converted into poisonous cesspool by continuous releasing of saline and sewerage water from MNV drain.

Historically, as mentioned above, before introduction of barrages system by British in 1932 the mighty Nai Gaj and other torrential streams continued their flow from west to east and released in River Indus. Britain irrigation system separated the kachho area and constructed flood protection Band, near the Taluka headquarter Johi. The Mighty Nai Gaj water was diverted from the Gaj Bungalow point by constructing first Teer Bhit in 1934. This chaining natural flow resulted in washing away of the Teer Bhit in the result of high flow of Nai Gaj in 1995 and Teer Bhit was reconstructed in 1996.

6.2 Mad Irrigation

On Nai Gaj people invented their own water lifting methods through Mad. A water course is made using wood props and mats made from local bush called *pesh* are

spread and bended. Nai water pressure is used to push water climb on this manual made water course and this water through *mad* irrigation is used to irrigate the lands at upper places.

6.3 Wahs

There is well developed networks of wahs which take their input from nai Gaj as Nai Gaj continues its mild flow throughout the year at the point of Nai Gaj Bamglow. some water experts and people with knowledge of history of the area say that the wahs have been dug by people since centuries some claim that Kalhora Rulers who ruled sindh including kachho area from 1718 to 1783, first constructed this irrigation system and latter on Britain improved the system by constructing Teer Bhit and canal irrigation in sindh. Crenel Anderson in 1879 recognized and improved the wah systems but Jalbani wahi, dhagi wah, lund wah, tuko wah ghari wah, hamzo wah gopang wah chandio wahs became drying up with the passage of time. And at present all these 8 small wahs who helped in irrigation, recharging underground water and flourishing wild animals and plants have become dysfunctional. Yet 10 wahs still are flowing.

This old irrigation system is still working in Drigh UC and its adjoining villages through few wahs. This is why the ground water is sweet and easily available in UC Drigh. But in main parts of remaining 5 UCs of Kachho the underground is deeper and brackish.

6.4 Ponds

There were about 200 large ponds in Kachho spreading over one acre and more according to the needs and space available. Out of these 200 ponds 70 were registered with government. The ponds worked as source for drinking, washing, and watering animal's purpose. Due to

these ponds underground water continued to be recharged and flora and fauna got sustained at present almost all ponds are dried up

6.5 Packa wells

Paka wells were main sources of drinking water for human and animal population. The digging and construction of the paka well used to be funded by government and individual philanthropists. The wells were also constructed on the sides of pathways for travelers Some where these were also used for irrigation purposes. There used to be one or more than one well in each village according to the needs of the human and animal population. Now the number of these paka wells has been decreased drastically. Visiting team of this study saw some of these wells were as old as five hundreds to 1000 years. During field visits the team saw old wells and majority of these were constructed beautifully. At Wahi Pandhi subtown, there were many wells constructed within the distance of few steps. When asked about the reason the local said that when one well dried up, the grower dug another and installed tube wells pipeline in the well because due to the precious and sandy content of the soil it was feasible to install the piping in the paka well with strong walls to avoid mud sliding.

Dried up Packa Wells

6.6 Ghandhas or soil made barriers

Before the arrival of monsoon, the villagers at different points erect huge barriers or Bands to check high flow of water from rapidly flowing. The purpose is to keep the water stopped for some time that the soil can absorb enough water that can help in germination, growing and ripping of the crop because there is no arrangement for arranging water for second and third time for the crop. Previously when agricultural machinery like tractors were not available the farmers pooled their resources like oxen, ploughs and men to erect the Ghandhas but now the huge soil erection is done thorough tractors . Numerous ghandhas are erected on different points. These vary in length, width and height. Some are as long as one or two KMs long. And others are 100 or 200 meters long. The erection cost also varies with the lengths, width and size.

6.7 Open dug wells (only for drinking and watering animal purposes)

These were ubiquitous, uncountable and common in use in kachho area. Due to availability recharged water source by Nais, Rain water, Ponds etc the water table remained stable. The people found sweet underground drinking water at digging of 5 to 8 feet level. Although the quality of this water was not ideal but people used traditional methods like filtering water to get its mud contents separated. But despite that the water was comparatively far better than today's canal water and water from other modern sources as the present water is polluted from multiple sources. In such cases people dug the kacha or open dug wells in the bed of torrential steams, dried pond, or in the bottom of any other past water way and got easily the sweet water. The water got through dug well was not in abundance. Some open dug wells provided enough water for whole day, others became empty after extracting water for five to six hours, and still some went dry after pulling out few buckets. People used to wait some time until the water slowly popped up again. This process still continue, particularly in UC Chhinni, in the bed of Gaj Nai, and other torrential steams in those area where underground is not sweet

7. Modern water sources

7.1 Submersible pumps (for irrigation and drinking water purposes)

From late 1990s to early 2000s the Submersible pumps made their entry in kachho for cultivation of the virgin sandy lands. And up till now their number has increased to about 2000. When electricity was in abundance and power breakdown was not chronicle problems, big land lords for their infinite greed to cultivate their thousands of acres of land ran these tube wells round the clock. Others who don't have their own land but possessed enough capital, took the land on contracts and installed the Submersible pumps. The landlords become billionaires but the water sources; particularly underground water of kachho was severally affected. The water table has dangerously dropped from average 60 feet before the arrival of the Submersible pumps to 500 feet to 700 feet at some places. The tree, plants, wild animals, birds and insects were all disturbed due to cleaning the land for this cultivation spree. Ecology of the area got grave set back due to the arrival and unchecked use of the tube wells

Submersible pumps

7.2 Hand Pumps

Hand pumps were common and relatively affordable drinking water source for common residents of kachho. Individual households or villagers jointly pooled their resources and installed hand pump or few hand pumps which meet their drinking, washing and watering

animals needs, the waste water also helped astray animals and plants. Government and individual philanthropists and latter on NGOs also found it easy to donate hand pumps where poor households or villages could not afford. The hand pumps were also installed by philanthropists and government on pathway and travel halting point as well as in front of mosques, mausoleums of the saints and such other joint places to cater for the needs of common people. But with the depleting of the underground water the hand pumps have become unfeasible.

7.3 RO plants

To response to the situation of brackish underground water the government started the scheme of providing Ro Plants in the areas where underground water was not sweet, hitherto 17 RO plants has been installed in various villages of kachho. Each RO Plant costs about 10 million rupees and has capacity to store 20000 gallons of water and can provide water to 1500 beneficiaries. But due to lack of care, silting in pipes and unavailability of electricity majority of these RO plants have become dysfunctional. Muhammad Uris Babar of Village Bahawal Babar shared that out total 17 RO plants only three are functional in kachho

7.4 Water supply schemes

There are 34 water supply schemes funded by Public Health Department. Due to depleting of underground waters quality and quantity and, neglect by communities and chronicle power breakdown, majority of these water supply schemes are becoming obsolete.

8. Materials and Methods

Author used extensive use of internet to gather secondary data. The data was also gathered from newspapers. Various studies carried out in past were also read and taken advantage for the clear background and historical context as well efforts made by different stakeholders to study and respond to the water issues and climate change problem

Author along with Sujag Sansar team visited 10 villages of different UCs kachho, conducted focused group discussion and individual interviews with key person about the water situation and changes in corp. and weather patterns. The persons participated in the FGD and

interviews included water experts, farmers, cattle and goat keepers and current elected representatives of local government, environmentalists, housewives, laborers and belonging to different walks.

9. Impact of Human intervention with natural systems

9.1 Disturbing of natural water flow

First British diverted the flow of Mighty Nai Gaj. The ruthless deforestation and cutting of bushes and herbs and removing dune barriers for brining the new land under cultivation, removed all natural barriers which were necessary for keeping the water flow slow and on many places these natural barrier stopped the nai or rain water for some time which helped in recharging of underground water and sustaining the growth of the flora and fauna. This removing of natural barriers also resulted in wide spread land erosion. In kachho areas during the field visit author saw large drenches made by flow of nai and rain water. Another human intervention is taking sand from the beds of almost all seven nais on tractor trolleys used in construction of roads and buildings. This activity aggravated the natural flow and underground water sweet quality, contributing to converting of the sweet underground water into brackish because the thick layers of sand filter the water and kept it sweet. During construction of roads the enough arrangements were not made to allow the flow of nai water resulted in diversion of nai water

Gaj Dam project in Kachho has become controversial. This was old demand of the people of kachho that Gaj dam should be constructed. But now majority believes that it would be more harmful than beneficial. Government says that with gross storage capacity of the 300,000 and live storage capacity of 160,000 AF, the Dam would generate 2.4 MW electricity. The starting date of the project shown on official website is May 3, 2012 and revised date of the completion is September 17, 2017. 47. 60 % work has been completed. During a public hearing by Consultants and officials of WAPDA in Dadu on March 26, 2015, the Consultant claimed that the construction of the Dam would immensely benefit the area and besides brining the large tracks uncultivated land and cultivation, the Dam would also restore and help in recharging underground water, flora and fauna. Whereas majority of the local farmers, particularly from tail end UCs like Sawro, TR Khan and Chinni say that the dam would only benefit three UCs while 70,000 people would suffer drought. At least 150,000 acres irrigated through overflowing of Nai Gaj would be rendered barren owing to the dam.

Once enjoying Asia largest fresh water natural reservoir, when filled fully spreads over 250 KMs and contracts to only 51 KMs, is feared to become major causality after the completion of the Gaj Dam. Manchar Lake due to release of Poisonous water from MNV Drain, the lake has been polluted. According to news report published in express tribune on July 5, 2013, 20,000 the fisher folk migrated after depleting of several spices bird, the report quoting renowned environmental Nasir Panhwer said that in past there were more than 102 birds spices and 200 fish spices but due to drastic decreases in fish catch only 200 fisher folk families are left in left in Manchar but after the completion of Gaj Dam, Manchar lake would take last breath because main sources of filling the Lake would be chained after construction of the Dam and little or no water would be left for filling the lake.

9.2 Impact on livelihood

When traditional and natural water sources worked fully the people have good access to livelihood sources, however there used to be droughts but people have their coping mechanisms and they faced these droughts without any external support, during bumper crops seasons they stocked the food grain and animal fodder and used it during drought period. When drought became longer or flood inundated the area, they along with their livestock and assets moved to greener or safer areas and returned after situation became normal. Women used to rare animals like goats or cow and they used to sell these animals during difficult times but due to climate change and depleting of traditional water sources, majority of the poor people has been hardly hit. The number of livestock has decreased drastically, although few big landlords corp. yield has increased because of installation of Submersible pumps on the cost of depleting underground water but majority of the poor and farmers with small landholding has been made paupers. Other main sources of livelihood, particularly during dry season is rope making. Majority of women are engaged in rope making but this activity also needs water. With depleting water sources and women busy in fetching water by walking 10 to 20 KMs, very little or no time is left for rope making and this has resulted in throwing more people below the poverty line.

Drought Condition

9.3 Impact on wild life, plants and traditional crops

During focused group discussion and interview, the elderly persons shared that they saw herds of wolf, jackals, and rabbits. Pigs, deers. Rendeers, Pharho, and other wild animals but all has disappeared due to lack of hiding places in the result of deforestation, and extensive human activity and hunting through guns. The people shared that population of domestic animals like Horse, Donkey, oxen; buffaloes have also decreased in kachho. Death ratio of Livestock also increases due to unavailability of water because of load shedding.

Birds like Vulture, Eagle and Chrii are extinct. Bird fall from tress and die due to unavailability of water. Jawar, the Traditional good grain staple crop of Kachho has decreased and cash crops of Kachho like mustard and Gawar have also decreased.

The several plants have been cut or are available in limited quantity like Kirar, kaderro and some herbs and shrubs and resultantly various species of birds which ate anti crop worms and other insects like *maker* have disappeared. The use of extensive pesticides and herbicides has also caused decrease and disappearance of some birds and crop friendly animals and insects

A 60 years old Goat Grazer at Pat Sulaman shared that, there were herds of wolves, jackals, rabbits Pigs and flocks of wild pigeons, chirii Or small sparrows, *heeras*, *koonj* and small doves called *pat garies* (small she dove) but since last 10 years he haven't seen many of these.

9.4 Impact Drinking water situation

One person needs a minimum of 15-20 liters of water per day for drinking and other imidaite needs. Animals, depending on their size need 15-30 liters per day to survive. According to government estimates, more than 20,000 families are affected in Dadu District from water related problems. Their water needs is about 3 million liters per day. It was observed that women and children were spending long hours daily to collect water.

according to quick survey by former Deputy Commissioner Dadu in 2012, 100 villages of Kachho were worst affected by drinking water shortage where women have to walk along with their donkeys 20 to 25 KMs to fetch water. Local MPA stated that water table has dropped 600 to 700 feet

As far quality of water is concerned, it is not fit for human consumption at all. Apart from different impurities like animal waste and straw, the high quantity of arsenic is also found in, hand pumps and other sources of underground water.

Rainwater and water flowing from Torrential streams recharges the wells and other underground water sources. The easy access to potable/safe drinking water is one of the basic human needs. According to 1998 census, the facility of piped water was available to 23.67% housing units. Use of hand pumps has been reported at 45.18%, while well as source of drinking water is availed by 18.81% both in rural and urban areas. Ponds and unspecified sources have been reported 12.33%, mainly in kachho area.

During individual interview the residents of the different villages shared that Sawan Jamali, Daria Khan, Muhammad Siddique and other villages are facing acute shortage of the drinking water. Women have to walk 10 to 15 KMs to fetch water from Submersible pumps

In village Ali Sher Jamali people have to walk 8 KMs to fetch water from Submersible pumps due to becoming dysfunctional of RO plants. There is only one hand pump in village Bahwal Babar where people have to wait hours for their turn to water as RO plant is dysfunctional because of power breakdown and technical faults. Heads of women has been injured and their hair removed due to fetching water on their heads from long distances. 'Previously we got water easily from wells but since 1990s water table has gone down' shared Uris

Interview with goats grazer

Babar from Village Bahawal Babar.

The field team with this author during visit to UC TR Khan and wahi pandhi saw men, women and children in large numbers on pickups, motor bikes, donkeys and by foot to flock the Submersible pumps to draw drinking water, women with bundles of cloths on their heads were walking to a Kumbs, 3 KMs away from wahi Pandhi in west to wash their cloths. The Wahi Pandhi Town with the population of more than 5000 souls is one of the main busy towns of kachho where people from Balochistan come for business. Here field team saw wells everywhere. People said that previously and on some extent at present, the grower's installed the tube wells in the wells and after some time the well dried up and the growers dug another well. This way the number of dried up wells runs in thousands. However Submersible pumps are major source of irrigation and drinking water for the residents of wahi pandhi and most areas of kachho but during long hours of power breakdown these Submersible pumps

Remain closed. People have to rush to Kumbs situated 3 KMs in west for fetching water for drinking and washing purposes. One famer said that there are 10 Kumbs in the western mountains.

Wahi Pandhi sub town takes its name from Wahi or a branch of torrential streams which flowed in the middle of the town during monsoon season but now it has diverted its flow slightly. People erect Ghandhas for irrigation purpose.

At Village Bahawal Babar, situation was worst. When this author along with SSO team arrived in the village, people rushed presuming visiting team as donors or government

functionaries. Women were more vocal. They said that they have only one hand pump for the villages with 500 households and fetching water for drinking, watering animals and washing, they have to wait hours after hours. They said that due to extreme poverty, they cannot afford installation of the tub wells and hand pumps or not feasible due to water table deeply falling. They said that it is miracle that one old hand pump is still working. The women during FGD, said that they have to walk 3 to 4 KMs to fetch water from tube wells. The author clarified that we are here only to take stock of the situation and are in no position to provide any kind of help. However we said that we will urge philanthropists or government representatives to pay attention to this problem. One of Our team members asked them why they don't demand from your elected representatives and concerned government department to provide you with this very basic facility of water. The women said that during election, we wanted to raise our voice in front of visiting candidates but our men restrained us and reprimanded us to keep salient. One 60 year old woman said that in nearby village women mustered their courage and refused to vote until they are provided with water. And they succeeded in getting one deep hand pump from the election candidates. They said that they want nothing else but water, they said that they are unable to do rope making which is their main source of livelihood especially during drought conditions because they are running day and night for fetching water.

They narrated that a group of women went to fetch water 2 Km away from the tube well, but suddenly weather turned rough and hail started which wounded the group of women.

A goat grazer at Pat Sulaman said that a well was dug by Sulaman Faqeer 8 generations ago for the villagers of pat Sulaman and travelers but after 1995 supper flood the well was filled with flood water and silt and since then its dysfunctional. A water drawer at pat Sulaman shared that he is arranging the water for the travelers at the *sabee*l, a structure on the side of the Wahi –Johi road where pitchers are placed on a raised structure under shade for travelers. Such sabeels are common in kachho on paths and roads as well as in front of the mausoleums of saints. The water drawer further said that he is providing this service for many generations. previously well was easy and nearest source of water but after it was vitiated by flood and water table went down extremely low the other easy and cheap option of hand pumps was also not feasible. Government provided RO plant but due to load shedding and technical faults the RO plant is dysfunctional and we have to walk 1 KM to bring water from the nearest tube wells. The goat grazer said that his stock of goat has been decreased because in past goats drank water from ponds, pools and in shortage time from wells but now all these sources have disappeared. He said that in past grass and bushes were in abundance and goats feed on them fully but now due to less rain, and brining of grazing land under cultivation, the grazing grounds has been reduced.

10. Stories of thirst

10.1 Graves of thirsty saints

The Goat keeper said that there are many graves of travelers on the sides of the road who died due to thirst while travailing by foot, on camel or on horse. He pointed out to a grave and said that this is grave of traveler who could not find water and died due to thirst and now he has become famous saint. He narrated that when the road was not paved, people traveled on foot or traveled in camel caravans and finding no water for drinking they died.

10.2 Marriage party Victim of mirage

The water drawer at Pat Sulaman shared a story that once a marriage party was traveling during summer time. due to extreme heat they took the mirage of desert as waves of water and in ecstasy emptied their khalies (the water carrying pot made from skin of goat or sheep). But when they proceeded some distance ahead they were alarmed to see that it was only mirage and not water, many of them died due to thirst. Others were rescued by a shepherd who gave some drops to every surviving traveler from his khalies.

10.3 Story of thirsty traveling family

Renowned writer late Anwar Prizado also wrote a story of thirsty family who died in kachho . A couple with their three children was traveling by foot in kachho, the weather was extremely hot. Their drinking water stock ran off. The husband left the wife and children in a semi shed of a small plant called *kirar* and went in search of water. The children were crying for water. The heartened mother started diverting attention of the thirsty innocent children by drawing lines on the sand with a stick. She said that these are patches of land where water is coming to us. Now water has crossed this patch and entered another, now water has crossed another ….. But her husband did not retuned, one child died and she tied his head with some shreds from her scarf and placed him under nominal shade of the plant. And continued with entertaining the other extremely thirsty children, but both children died. The mother also took her last breath and the man also died on his way.

Erratic weather causing extreme natural disaster

Heavy rains and high flow in torrential streams causes flood situation which creates disruption of livelihood problems and migration for the population. In 1995 high flood in Nai Gaj resulted in breaking of Teer Bhit and breaches in FP Band. But damage and difficulties caused by floods followed by greenery and bumper crops which brings prosperity in Kachho area.

In every five to 8 years there is medium and worst kind of droughts. People have to migrate to overcrowd nearby towns and far away major cities where they face several problems of not found livelihood. Drought cause livelihood and drinking water problems for the already poverty hit population. In June 2010, due to flood, 80 percent population of 3 most drought affected UC migrated to towns. Chairman of UC Tando Rahim Khan shared that due to

unavailability of electricity the water supply, RO plants or Submersible pumps, the main sources of water remain closed and people particularly women folk walk 15 to 20 KMs to bring water. He said that birds sitting on trees waiting for water from this electricity run sources start falling from the trees and die when they cannot find water for long hours and some time for days.

11. Climate Change and its impacts on water resources

For last decade deforestation is ruthlessly going on in kachho which has caused disruption in rain cycles, depleting of water resources and damage to wild life in kachho which once remained green and repository of wild life.

Despite Sujag Sansar organization and other civil society and media's hue and cry kandi, lai, jal and lohiro trees are being felled According to an estimate, local people were cutting down 5,000 trees of Jar (Salvadora oleoides) and 1,500 trees of Kandi (Prosopis cineraria) on a daily basis and selling them to middlemen. Said a report in dawn

12. Results and Conclusion

In the result of the study it can be concluded that Kachho was and still is rich in water resources, prime land, wild life, various plants and shrubs, natural beauty. People are very hospitable and hardworking. But due to manmade intervention, neglect and indifference by concerned stakeholders as well as climate change factors, the area is facing worst kind of environmental disaster. Water resources have been victims of unchecked human greed of big landlords to bring more and more land under cultivation, unchecked felling of tress for decades.

The study fears that if following steps are not taken immediacy the environmental disaster would be aggravated and water resources would deplete further

- Check or bane the ruthless felling of trees
- Ban or restrict the number of Submersible pumps which are responsible for dropping drastically underground water.
- Provide solar run drinking water supply facilities as electricity in main parts of kachho is available for only two hours in 24 hours duration
- Make public the EIA report on Gaj Dam, address the concerns of local people and independent environmentalists on land rights and environmental concerns
- Especial arrangements should be made in the designed in Gaj Dam for releasing enough water to be released in Manchar

- The study recommends constructions of small cemented barriers in the water ways to check rapid flow of torrential streams and rain water for recharging water table.
- The small dams at the point of Bahawal Babaer and other points after conducting feasibility studies are suggested to be constructed for checking the wastage of water and helping in recharging of underground water as well as providing water for farming, drinking and restoration of flora and fauna
- Educating farmers against extensive use of pesticides and herbicides and banning the practice if necessary.
- Banning the hunting of threatened bird spices and wild animals like bustard, doers and renders and take steps for protection of these few left brides and wild animals
- The road constructions and other infrastructure project in Kachho should take especial steps not to disturb the natural flow of water resources
- The environmentalists and representatives of other nongovernmental should visit kachho and prepare and submit a fact finding report to be made public or submitted to concerned stakeholders for further actions

13. Links:

http://www.dawn.com/news/1127001
http://www.pakguns.com/showthread.php?9988-Visit-to-quot-kachho-quot-A-journey-through-time
http://reliefweb.int/report/pakistan/pakistan-drought-assessment-report-district-dadu-sindh
http://www.dawn.com/news/954381/survey-in-kachho-area-to-assess-water-shortage
http://www.dawn.com/news/887598/water-starved-kachho-villagers-move-to-towns
http://www.dawn.com/news/499788/tree-felling-depleting-water-reserves-cause-climate-changes-in-kachho
http://www.dawn.com/news/1158276
http://tns.thenews.com.pk/tackling-climate-change-in-sindh/#.VuHAYvkrLIU
http://www.dawn.com/news/25070/water-resource-management-in-kutcha-areas
http://www.dawn.com/news/25070/water-resource-management-in-kutcha-areas
http://www.dawn.com/news/888330/underground-water-level-falling-in-kachho-says-exper
Media advocacy on Gaj Dam environmental side
a write up by Gulsher Panhwer, staff member of SSO
http://pakistanlink.org/Headlines/Dec13/10/13.htm
SSO facilitated WHO team on water issue
http://www.emro.who.int/pak/pakistan-news/water-breaches-dadu-july.html
Water report on kachho by Hakim Ali Shah Bukhari
Book Dhandoo by Aziz Ranjhani