

WATER CRISIS IN BALOCHISTAN ITS IMPLICATIONS AND WAY FORWARD

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ABSTRACT

A water crisis is an alarming issue in Balochistan. The persistent crises lead towards catastrophic future condition. Water is essential for human livelihood and other types of economic developments. A province that is situated in an arid zone where due to low rainfall is scarcity of water. The qualitative research methodology will be applied on this research paper. The data collection will take place through secondary sources i.e. books, magazines, journals and internet websites etc. The major causes for water crisis are shortage of rainfall, climate change, misuse of water, over-urbanization, global warming, non-availability of sufficient dams in Balochistan. There are severe implications and repercussions of water crisis in Balochistan. It leads towards agricultural crisis, loss of biodiversity, migration, drought condition, poor quality life and low income etc. There is a need to adopt a proper strategy that how to overcome the water crisis in Balochistan. The construction of dams, the public awareness, the re-cycling of water, aqueducts, desalination of water, improvement in sewerage system, rain water harvesting can enable us to overcome the water crisis. The sustainable water management approach will be applied to treat reuse and to control the wastage of water. The research will be conducted by keeping in view the socio-economic perspective.

Keywords: Balochistan, Climate change, Viable strategy, Water crisis.

INTRODUCTION

“All is born of water; all is sustained by water” (P. Bradley John, 2000:1002). The most serious crisis of the country has hit Baluchistan where water shortage is catastrophic. The 21st century is declared as a century of energy. The water crisis is considered as one of the non-traditional security threats. It will be a future threat to viable Balochistan economy. There is a great need to adopt a feasible strategy to solve this problem. Water is essential for food security, health, livelihood and general economic development. In the modernized

world, the water crisis is emerging as challenge for third world countries. Due to water scarcity the forests are converted in to deforestation, and pastures are transformed in to desert areas. Water stress is a serious issue in many parts of the world. Discover its causes and effects, but most importantly the solutions to the water crisis. Due to water scarcity, the water is insufficient to fulfill the demands of the region. The water is unequally distributed. The apex court has included the right to clean and healthy water for each and every citizen.

OBJECTIVES

- To highlight what are the causes of water crises in Balochistan?
- To bring in to limelight what are negative implications of water crises on eco-system?
- To suggest the remedies how to solve the water problem in Balochistan?

RESEARCH QUESTIONS

- What factors contributed to looming water crisis in Balochistan?
- How human life is affected due to water crisis?
- What reform should be introduced for the conservation of water in Baluchistan?

RESEARCH METHODOLOGY

The qualitative research methodology will be applied in this research paper. The data collection will takes place through secondary sources. The data will be collected through books, journals, magazines, newspapers and internet websites etc. The water resource management model will be applied on the research paper.

MAIN SUBJECT

There are various factors which contribute towards water scarcity in Balochistan. The province is already deficient in water resource. There is no proper planning and management of water resources.

CAUSES OF WATER SCARCITY

Poor Water Policy: In Baluchistan poor water policy is implemented. In the interior areas of Balochistan, the people don't have accessibility towards safe and clean water .It was planned that

water will be properly managed till 2008, but still till present there is no such a feasible plan has been adopted in Pakistan, including Balochistan. There are gaps exists regarding policy implementation. The government is not sincere to take effective steps to implement the policy in letter and spirit. “The major objectives of the policy are improving watershed management, catchment area treatment, conservation of water, improving availability of water and sustainable consumption” (Kundi, Brayshna, 2017:77). The water issue is one of sustainable development goal. The Pakistan’s SDG’s vision is to control water scarcity till 2025.

OVER-URBANIZATION

The migration of people from rural area towards urban is a burden on water resources. The water consumption has been increased due to proliferating population in urban area. The interior area of Balochistan is very backward, devoid of basic health and educational facilities. The over-urbanization leads towards lack of aquifers contribute to the looming crisis of water. The impacts of urbanization on Balochistan’s water resources in order to provide foundations for future policy that will leads towards country’s socio-economic development. The various issues are related to over-urbanization have been identified including contamination of surface and ground water resources through domestic discharge of waste water. Urban development can change the water dynamics of demand and supply. The establishment of new housing scheme threatens the freshwater availability. The over-urbanization is increasing 37.2% in contemporary period.

Water Pollution: The water pollution contaminates the water, and it is also one of the sources of water shortage. Water pollution occurs when harmful substances often chemicals or micro-organism contaminates a stream, river, lakes, ocean, aquifer or other body of water, degrading water quality and rendering it toxic humans or the environment. Water pollution is lethal for health and kills multiple people each year. Human activities are polluting the water badly, and only 1% freshwater of Earth is accessible to us. The water pollution comes from various sources, including sewage and waste water without being treated from agriculture and industries. The waste water mixes up with fresh water and also contaminates it. In most of the

places, the clean water is converted in to polluted water. The surface water and contaminated water is polluted due to pesticides and other lethal materials.

SHORTAGE OF RAINFALL

Balochistan is situated in the zone where there is scarcity of rainfall. There is shortage of rainfall in Balochistan, due to the global warming and climate change. The whole province receives 176 millimeter rainfall annually. In certain areas like Nukundi, Turbat, Panjgur, Pasni, Chaghi, Kharan, Washukand Jiwani there is no rainfall throughout the whole year. There are impacts of rainfall on irrigation sector, water resources and livestock etc. The rainfall water is wasted, and it is not used for harvesting purpose. “The excessive rainfall is the cause of floods, which plays havoc with human and animal lives and infrastructure” (Hassan Mir & Abbas Ali, 2023:4). The average rainfall ratio throughout the year is very less in Balochistan, which contributes towards the scarcity of water.

Role of Institutions in Water Scarcity: The various institutions are not implementing the water policies in true letter and spirit. They are not involved to properly aware the masses about the consumption of water. The water aid department is responsible to tackle the water issue. The water aid department is not playing key role in the proper management of water.

NATURAL CALAMITIES

The excessive rainfall leads towards high spillover of the water and resulted in form of floods. The water is wasted in floods, rather than it should be saved in dams. It leads towards water scarcity. The floods play havoc with human and animal lives.

NON-AVAILABILITY OF SUFFICIENT DAMS

In Balochistan the numbers of dams are not sufficient for the storage of water. Most of dams are filled due to over silting, and they are not properly cleaned for re-use. The planning and development department is not paying heed towards the construction of new dams in Balochistan. After the 18th amendment, the NFC funds is mis-utilized and allocated in to corrupt hands.

Overuse and Wastage of Water: The people have little awareness that how to use water carefully. The people waste water at home during daily use. They don't think what gift we will give to our coming generation, "water crisis". The water is blessing of Allah, and in Islam the water wastage is prohibited.

INCREASED HUMAN WATER CONSUMPTION

The consumption of water by human beings is increasing day by day. The people are roughly using water, and lot of water is wasted. Water is a precious blessing of Allah, and one should give regards to this blessing. Otherwise, if this blessing is lost, the human beings will suffer a lot.

CLIMATE CHANGE

The climate change is primarily a water crisis. The climate change is also contributing towards low precipitation in Balochistan province. Climate change is responsible for water scarcity and other hazards i.e. floods and droughts etc. The climate change and water are inter-related with each other. Climate change affects the water patterns and entire water cycle. As the temperature of the world increases, it sucks up water from oceans, lakes and rivers etc. The dry air laid down negative impacts upon drinking water and irrigation. "Water resources are affected by climate change, and it impacts the behaviour of glaciers, recurrence of floods and droughts and rainfall patterns. The climate change is a dire threat towards the accessibility of fresh water" (United Nations, 2021:2).

GLOBAL WARMING

Global warming also creates water scarcity. When the temperature rises, the water of lakes and rivers evaporates, and it leads towards drying up of water bodies. It also affects the local water supply. The warmer air holds more moisture than cool air. It suck up water from rivers, lakes and oceans.

POPULATION GROWTH

The population explosion has increased the water intake or consumption of water. The existing resources are not sufficient to fulfill the requirements of gigantic population. The proliferation of population is alarming for future water needs. The more water is

needed for food production of large population, and it creates the shortage of water. The available water is steady or it is depleted, but the rate of population is rapidly increasing. The entire household needs water for their daily requirements. “The fifty percentage (50%) population is water stressed. The increasing population leads towards water pollution. The growing population laid down the negative impacts on global resources”(Bensen Deborah, 2022:2).

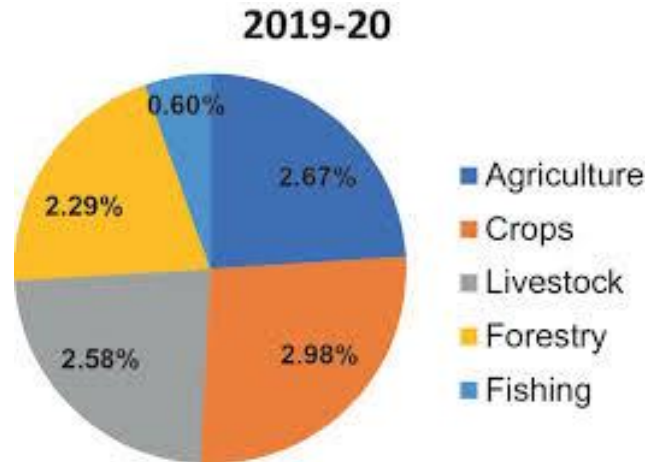
IMPLICATIONS

Agricultural Crisis: Agriculture is the backbone of Balochistan’s economy. The 65% population is affiliated from agriculture sector. The agrarian products are essential for livelihood of individuals. Balochistan’s land is rugged desert or low-grade rangeland. Water is the main factor which limits or enhances the productivity of the land. Water policy should focus on sustainable use of water by switching from conventional to conservative agriculture. The agriculture sector is the largest consumer of water. A large area is water – logged and saline in Balochistan. The crop productivity is also affected due to water scarcity. The cultivated area of Balochistan requires a sufficient amount of fresh water.

Migration: Water scarcity leads towards migration. Due to water scarcity the land is not suitable for living and for cultivation purpose. The people survival became at stake. They are compelled to migrate towards other places. “The old civilization like Indus civilization and Egyptian civilization were also rehabilitated across the water of Nile River and Indus river in order to grow the pastures” (Saconnex, 2018:11). The water is major source of attraction in the past and present. The people face hardships to fetch the water from far-flung areas. The water is not sufficient to fulfill their daily requirements, so they leave their hearth and home to migrate towards another place where there is an abundance of water.

Loss of Biodiversity: The scarcity of water lead towards the imbalance of ecosystem. The many species are endangered and are at the verge of distinction. Many plants are unable to survive due to shortage of water. It leads towards loss of biodiversity in nature. The healthy ecosystem is disturbed due to climate change and water scarcity. The living organism interacts in a dynamic ecosystem, the disappearance of species laid down lethal impacts on food chain,

which indirectly leads towards food crisis. “The bio- diversity is essential for human life it provides clean water, fresh air, best food, and good quality soil etc. It helps to minimize the natural hazards and to combat natural climate, biodiversity has far-reaching consequences on environment and human beings” (Ahmed & Stephen, 2022:4).



Source: Research Gate.

DROUGHT

The perpetual water crisis leads towards the drought condition, which can cause the death of plants and animals. The drought can amplify the water scarcity, and water scarcity can aggravate droughts. Due to drought, the agriculture and food security are severely affected. The drought condition is produced due to low precipitation and prolonged shortage of water supply.

Local Commerce Declines: The water is essential for the sustainable development of economy. The agriculture is the mainstay of economy, and Baluchistan is already an arid zone, major chunk consists of barren land. The major productions of Baluchistan are wheat, rice, grains and sugarcane etc, which contribute to 5% of Gross Domestic Product (GDP). The water is vital factor of production. Economic growth is a “thirsty business” (Sattar Uzair, 2023:10).

INCOME GOES DOWN

The water scarcity contributes towards thirst economy and decline of resources. The economy depends on industrial and

agriculture sector. The Balochistan's mainstay of economy is agriculture. The per capita income decreases and overall graph of income decreases. The employment opportunities decreases and level of income goes down. It leads towards overall balance of payment deficit. The Balance of payment leads towards deficit of trade. It leads towards high inflation rate and devaluation of currency.

Tax Revenues Decrease: The tax revenue decreases due to scarcity of water. The major taxes are collected from agriculture sector. When the agrarian production turned low due to water scarcity, it also affects the revenue of the country, and finally it collapses economy and budget deficit. Another factor when people migrate due to scarcity of water, the number of taxpayers decreases, and the collection of revenue is not up to the mark.

Drinking Water Shortage: The water crisis leads towards severe shortage of water, and the people face lot of problem to have their accessibility towards clean and fresh water. The interior areas of Balochistan, the people face the problem of accessibility towards fresh water. It is the dilemma of the third world countries in 21st century that they are facing the problem of water shortage.

Poor Life Quality: Due to water, the people can maintain high standard of living. The sanitation and hygiene is only possible due to water. The human beings and animals drink water from same pond, and it leads towards the contamination of water, which cause diseases like hepatitis B&C. The epidemic diseases of diarrhea and cholera became common among residential population. The area is transform in to shanties and slum areas.

WOMEN ARE GREAT SUFFERER OF WATER SCARCITY

The women and girls are great sufferers due to water crisis. They fetch water from far-flung areas to their home. They have to rely on little water for domestic needs. They are responsible for their family needs i.e. cooking, drinking and sanitation etc. The men are rarely involved in bringing water from distant areas. During this activity, the girls miss their schools, and women lose their decent standard of living. It is a colossal wastage of time. It requires physical hard work for women to bring water. During pregnancy, the women are bound to perform these duties. There is also risk of gender-based violence during this exercise. Sometimes, the wild animals i.e. dog attack upon

women and brutally injure them. Water scarcity badly affects women, leading towards educational setback, reduces family economy and occurrence of domestic violence.

REMEDIES

Balochistan is confronting urgent crisis of water, which needs immediate attention. If it is not treated in time, it will lead towards the serious repercussions. It is said that delay has dangerous ends. The proper planning and management is essential to secure and enhance the water resources. The water management model should be taken from first world countries, that how they cope up with their water crisis situation.

Dams and Reservoirs: There is need to construct more dams and water reservoirs for water storage. Dams are essential to sustain the agriculture sector. The ratio of precipitation is very low in Baluchistan. In certain areas of Baluchistan, due to scorching heat most of the streams turn dry in summer season. They can also be utilized for hydro-electric power. The climate change is playing a key role in creating the scarcity of water. The dams are constructed to store, regulate and divert water for multiple purposes e.g. hydropower generation, and agricultural production etc. The reservoirs building leads to increase in long-term water-use, which can be utilized for a prolonged period of water storage. “The sixty four (64) dams have constructed in Baluchistan to irrigate the land. The federal government has announced to construct one hundred (100) small dams in Baluchistan. Under China Pakistan Economic Corridor (CPEC), there is also a suggestion to construct new dams for the storage of water in Baluchistan” (The Express Tribune, 2022:7).

WATER RESOURCE MANAGEMENT MODEL

Water resource management model have been use to inform decisions about water supplies, ecological restoration and water management in complex system. Water resources development includes economic, environmental and social considerations that identify the plans, designs and policies to maximize the desired impacts. Water resource management model is essential for water resources planning and management activity. It focused on flooding problems, reservoirs operations, ground water development, water

allocation or aquatic ecosystem. Model can predict interactions between ground-water and surface water bodies, as well as flows and their constituents in stream and river channels.



Source: Springer link (<https://link.springer.com/>).

The necessity of Karez System in Balochistan: Karez System is very old and successful irrigation system in Balochistan. In this system, the ground water comes on the surface by the tunnel. Karez is a permanent source of water for daily domestic and irrigation purpose. The karez system allowed the native people to tap in to underground water sources through networks of tunnels and channels that brought water to the surface for irrigation. The 11% area is irrigated by karez. This system is operated in a traditional manner and enhances productivity.

Water Reuse: The water can be reused or recycled for multiple purposes. The aquarium water can used to irrigate the plants. The bucket can be placed under the shower to save and reuse the water to irrigate the grassland. The rain garden can be created from the reuse of the water. The grey water collection system can be installed.

Improve Sewage Systems: The good sewage system is essential for clean drinking water. The water without sanitation becomes disease ridden. The improvement in the sewage system can contribute to prevent the scarcity of water. The sewage system can be improved by pumping out the solids, and don't dump oils or grease down your

drains. And never wash chemicals down your drains. Basically, four methods are used for sewage water treatment: physical, biological, chemicals and sludge water treatment. "Sewage system improvements include two specific techniques: converting basic septic systems to either centralized sewer systems or advanced septic systems, and repairing existing sewage system components" (Mawbay Sean, 2022:4).

Better Water Distribution Infrastructure: Many people still in the interior rural areas of Baluchistan are not connected to public water infrastructure. The people in Baluchistan don't have the accessibility towards fresh water; they take water from ponds and spring etc. The water pipe line should be extended in rural areas of Baluchistan.

Sustainable Water Management: The sustainable water management that individual and nation should be self-sufficient in water needs. The water supply should be consistent amidst all circumstances. There is need to adopt the holistic approach at all levels for sustainable water management. The various strategies can be adopted for sustainable water management. "The United Nations General Assembly recognition of "the right to safe and cleaning drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights" (Adam Troy, 2021:5). The drinking water resources should be protected. The aquatic environment should be saved. The water problems should be minimized. The various strategies for sustainable water management are: conservation, reuse, demand management, conveying water from one location to another etc. The different practices can be adopted for sustainable water management .It includes the construction of dams for storage of water and the slow flowing down of water from stream bed.

Awareness & Education: The awareness should be created among the community to work together to save the water resources for future generation The awareness should be created about water issues, especially about waste water treatment technologies and sanitation practices. The subject of water should be included in curriculum. The seminars, conferences and workshops should be conducted to create awareness among the masses regarding the significance of water for the future generation. The different articles should be compiled that should published in newspapers and magazines about the significance of water resources.

National Water Policy: The National water policy provides the guide line for water conservation and to tackle the issues related to water. The policy seeks to respond to the water crisis. Pakistan is becoming a water scarce country very soon in future. The government is embarked upon the policy to provide clean water to each and every citizen. It is the basic right of each individual to have an access towards clean drinking water.

KEY POINTS

- “The key points of water national policy are water conservation and efficiency, water storage and integrated water resource management” (National Water Policy, 2023:13).
- The pillars of national water policy are enhance water quality, rationalize water use and to develop water resources etc). There is a need of best water planning and management for each province.
- The water is essential for environment and regulation of ecosystem. The water should be stored by following the various steps: Coagulation, flocculation, sedimentation, filtration and disinfection.
- The promotion of sustainable water consumption and production patterns of water from exploitation.
- The allocation of water resources of country in an equitable manner for sake of efficient use.
- There should be improvement in the availability fresh water resources for energy, security, agricultural and environmental needs.
- There should be improvement in urban water management by enhancing system efficiency in order to address drinking water demands and sewage disposal.
- To promote behavioral change to reduce wastage of water by raising public awareness.
- Hydropower development to increase the renewable energy.
- To expand water availability to adapt to climate change and population proliferation.
- To enhance reuse of waste water in domestic, agricultural and industrial sector.

Water Conservation: The water conservation is essential for our survival in future. The human beings depend upon water. The industries and agriculture sector depends upon water. It will immediately solve the problem of water and also prevents the depletion of underground water. The water should be re-cycled for public use. The heavy rainfalls provide the enormous opportunities to save the rainfall and conserve water. The government should have embarked upon such a feasible policies regarding landscape planning and flood mitigation. There is a need of water conservation now and for future. The fresh water is only 3% out of existing water of the entire world. There is need to use water wisely and carefully. The water is polluted for the variety of purposes .The lethal water from industries and water from sewage system directly seeped in our drinking water. There are very little facilities are available for water storage. The flood became a common catastrophe in our country. The deforestation also contributes towards water scarcity. There is need to conserve water at individual level and national level.

ANALYSIS

The amount of water that can be physically accessed varies and supply and demand changes. Water scarcity intensifies as demand increases or as water supply is affected by decreasing quantity or quality. Water is finite resource in growing demand. There is water scarcity especially in rural areas. There is a lack of political will, and politicians are not paying heed towards fulfilling the basic necessities of people. They are fully aware about the fact that due to climate change, global warming and over consumption the water crisis is looming in Baluchistan. Of all the provinces, Balochistan is the worst hit by this crisis. Only half a century ago, this mineral rich province had flowing streams, karez and underground wells which were deemed adequate. Today, lack of rain and over exploitation has dried up the streams and karez. In Balochistan, annual precipitation ranges from 50 to 500mm, as much of it lies outside the monsoon zone. Women have to walk miles each day to fetch a single container of water to meet their families' needs. Coastal regions require desalination plants while the local population has to be taught water discipline along with better water management by government agencies. None of this should be taken lightly. The water shortage in Balochistan merits being tackled on a war footing.

QUESTION – ANSWER ANALYSIS

1. Is water exists in ample amount in Balochistan?
Most of the people have opined that water does not exist in ample amount especially in the interior areas of Balochistan. Most of the people are dependent on tankers for the sake of water supply. There is a scarcity of rain which is posing damage to the agriculture sector of Balochistan.
2. Is water is stored in a proper way in Balochistan?
There is shortage of the dams in Balochistan to store water at the time of need. The dams are filled due to over-silting. So, due to rains the spillover of water takes place, which appears in form of catastrophe of floods.
3. Is there any mechanism to re-cycle water in Balochistan?
Balochistan is industrially very backward area, devoid of facilities. There is no any mechanism exists to recycle water for the consumption of masses. Lot of water is wasted by people due to lack of awareness and not apprehending the future repercussions.
4. Is there proper sewage system in Balochistan?
There is no proper sewage system exists in Balochistan. Due to rain the water is spilled over from gutters and it creates problems for traffic and common people. The garbage is expelled from gutters and channels, which makes atmosphere very filthy.
5. Are government steps and reforms are essential for the availability of water? The government has not taken proper steps for availability of water. The government has promised to install filtration plants till 2008 to clean water for people. In the interior areas of Balochistan, the people don't have accessibility towards clean water.

CONCLUSION

Water scarcity is frightening situation in Baluchistan. Water is an asset of nature, which is essential for the survival of human beings. The ecosystem consists of human beings, animals and plants are revolving around the water. There is no proper water policy is adopted to save the reservoirs of water. The situation is highly alarming for future. The urgent steps are required to implement the effective policies to secure the future of coming generation. The natural resources are depleting due to maximum conservation by huge

population. The effective reforms and policies are to be introduced to overcome the water crisis. There is failure of governance regarding water issue. The new infrastructure should be maintained for the supply of water. The new water conservation strategy should be adopted to streamline the water resources. The awareness should be created among the masses regarding the conservation of water. The water issue is highly affiliated with life; otherwise the activities of life will be at stake.

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