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**Pakistan's Water Crises at the Eleventh Hour**

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## **Pakistan's Water Crises at the Eleventh Hour**

by

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### **Key Themes**

Pakistan is sleep walking towards a water crisis due to demographical variables and impacts of climate change.

There is a need to not only store water but also to focus on conservation and water management

The declining quality of water is also a major challenge in Pakistan

Good practices from global examples and a focused policy can help Pakistan to manage water scarcity

### **Water in the Context of Pakistan**

Pakistan since the 1970s has been sleepwalking into a water availability crisis. From water surplus it became water stressed and now is on a road towards water scarcity<sup>1</sup>. Estimates suggest by 2040, owing to the coupled factors of climate change and population growth, Pakistan will be one of the most water strained country across the globe<sup>2</sup>.

Pakistan's water needs are largely meet by the Indus River and its tributaries. This glacier fed rivers for centuries have provided rich fertile land along its tributaries for human habitation. At the same time ground water extraction has also been a prime source of water for commercial,

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<sup>1</sup> Briscoe, John and Qamar Usman. (2005) "Pakistan's Water Economy Running Dry". The World Bank and Oxford University Press.

<https://waterinfo.net.pk/sites/default/files/knowledge/Pakistan%27s%20Water%20Economy%20Running%20Dry%20Oxford%20University%20Press%202006.pdf>

<sup>2</sup> Maddocks, Andrew, Young, Samuel Robert and Reig, Paul. (August 26, 2015). "Ranking the World's Most Water-Stressed Countries in 2040". World Resources Institute. <https://www.wri.org/blog/2015/08/ranking-world-s-most-water-stressed-countries-2040>

agricultural and domestic activities. Historically being a water surplus country has meant that governments and people have failed to realize the need to conserve water, despite changing demographical and climatic trends<sup>3</sup>. In 2018 the water availability stood at 1,017 cubic meters per capita<sup>4</sup>. Despite water shortage 21 billion US Dollar worth of water is dumped into the Arabian Sea annually<sup>5</sup>. At the same time contamination of rivers, ground water and lakes has also been adding to water stress<sup>6</sup>. Building expensive mega dams has been politically and publicly viewed as a viable solution for the looming water crises however there is little deliberation on water conservation and management techniques<sup>7</sup>.

## Agriculture

In 2018 Pakistan's agriculture contributed 18.9 percent to Gross Domestic Product (GDP) and absorbed 42.3 percent of country's labor force<sup>8</sup>. It is estimated that this mega sector of the country loses 60 percent of its irrigation water in conveyance and application<sup>9</sup>. The agriculture is sustained on the Indus River and its tributaries feeding an extensive system of canals combined with ground water extraction by tube-wells. Leakage of water from colonial era brick-lined canals result in loss 40 percent of the water<sup>10</sup>. As cash/major crops Pakistan has been growing

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<sup>3</sup> Craig, Tim. (August 12, 2016). "Pakistan has more glaciers than almost anywhere on Earth. But they are at risk". The Washington Post. [https://www.washingtonpost.com/world/asia\\_pacific/pakistan-has-more-glaciers-than-almost-anywhere-on-earth-but-they-are-at-risk/2016/08/11/7a6b4cd4-4882-11e6-8dac-0c6e4acc5b1\\_story.html?utm\\_term=.7f971a484193](https://www.washingtonpost.com/world/asia_pacific/pakistan-has-more-glaciers-than-almost-anywhere-on-earth-but-they-are-at-risk/2016/08/11/7a6b4cd4-4882-11e6-8dac-0c6e4acc5b1_story.html?utm_term=.7f971a484193)

<sup>4</sup> Baloch, Meer Shah. (June 7, 2018). "Water crisis: Why is Pakistan running dry?". Deutsche Welle. <https://www.dw.com/en/water-crisis-why-is-pakistan-running-dry/a-44110280>

<sup>5</sup> Gurmani, Nadir. (November 2, 2017). "Pakistan dumps \$21bn worth of water in the sea each year: IRSA". Dawn. <https://www.dawn.com/news/1367885>

<sup>6</sup> Ebrahin, T. Zofeen. (September 23, 2015). "Manchar Lake: Toxic water, dead fish fill Asia's largest freshwater body". Dawn. <https://www.dawn.com/news/1208624>; Afzal, M. , Shabir, G. , Iqbal, S. , Mustafa, T. , Khan, Q. M. and Khalid, Z. M. (2014), Assessment of Heavy Metal Contamination in Soil and Groundwater at Leather Industrial Area of Kasur, Pakistan. *Clean Soil Air Water*, 42: 1133-1139. doi:10.1002/clen.201100715; Moti, Zafar, Namrah. (September 27, 2018). "How a polluted lake is endangering life in and around it". Herald.

<https://herald.dawn.com/news/1398673>; Staff Reporter. (11 May 2018). "Toxic water in Punjab's Kot Asadullah village infamous for causing deformities". The Express Tribune. <https://tribune.com.pk/story/1707642/3-toxic-water-punjabs-kot-asadullah-village-infamous-causing-deformities/>

<sup>7</sup> Briscoe, John and Qamar Usman. (2005) "Pakistan's Water Economy Running Dry". The World Bank and Oxford University Press. <https://waterinfo.net.pk/sites/default/files/knowledge/Pakistan%27s%20Water%20Economy%20Running%20Dry%20Oxford%20University%20Press%202006.pdf>

<sup>8</sup> Government of Pakistan. (2018). "Agriculture". Economic Survey of Pakistan. [http://www.finance.gov.pk/survey/chapters\\_18/02-Agriculture.pdf](http://www.finance.gov.pk/survey/chapters_18/02-Agriculture.pdf)

<sup>9</sup> Imran, Myra. (September 24, 2018). "More than 60 per cent of irrigation water is wasted". The News. <https://www.thenews.com.pk/print/372313-more-than-60-per-cent-of-irrigation-water-is-wasted>

<sup>10</sup> Qarni, Owais. (December 2, 2006). "Alarming situation: 'Century-old canal system results in 40% water losses'". The Express Tribune. <https://tribune.com.pk/story/1250718/alarming-situation-century-old-canal-system-results-40-water-losses/>

rice, wheat, sugarcane and cotton varieties that require massive amounts of water<sup>11</sup>. In addition, flood irrigation has been used as means to feed these crops which results in huge loss of water from the surface<sup>12</sup>. Crops like sugarcane and cotton have caused pollution in water sources such as ponds, lakes and rivers due to excessive seeping of fertilizers causing eutrophication<sup>13</sup>. Lastly, pumping of excessive amount of ground water, 94 percent of which is done for irrigation, is not only leading to depletion of water but can also cause land sinking<sup>14</sup>. Mismanagement and wastage of water has already caused around 43% of the area in the Indus Basin Irrigation System to be waterlogged, affecting around 7.1 million hectares of land<sup>15</sup>.

### **Industrial and Residential Usage**

Industries and domestic usage account for a small proportion of water usage, some estimate less than 5 percent, but the rise in urban population and unchecked pollution caused by industries have a drastic impact on water availability. Firstly, the low pricing of water is a huge issue. Treating water as a renewable source has led people to perceive it as an invaluable and widely abundant resource. The water situation in cities like Karachi and Gwadar act as testimonies of what the future of cities can look like, if water is not conserved. Secondly, contamination of lakes and ground water by untreated sewage and industrial waste has not only resulted in a decline in aqua eco-systems across the country but has led to adverse health impacts. For instance, residents in densely populated urban and peri-urban locales like Kasur and Kot Asadullah have shown birth defects, signs of heavy metal and toxic poisons poisoning as well as inflated cases of water borne diseases<sup>16</sup>. Illegal ground water extraction by industries, companies

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<sup>11</sup> Briscoe, John and Qamar Usman. (2005) "Pakistan's Water Economy Running Dry". The World Bank and Oxford University Press.

<https://waterinfo.net.pk/sites/default/files/knowledge/Pakistan%27s%20Water%20Economy%20Running%20Dry%20Oxford%20University%20Press%202006.pdf>

<sup>12</sup> Shahid Javed Burki Institute of Public Policy at NetSol. (2018). "White Paper on Performance Appraisal of the Agriculture Department". Agriculture Department Government of Punjab.

<http://www.sjbipp.org/publications/PR/projectreport/PR-33-18.pdf>

<sup>13</sup> Iqbal, Muhammad Mazhar, Shoaib, Muhammad, Agwanda, Paul, Lee, Jung Lyul. (2018). "Modeling Approach for Water-Quality Management to Control Pollution Concentration: A Case Study of Ravi River, Punjab, Pakistan".

International Journal of Environmental Research in Public Health.

[https://www.researchgate.net/publication/326971117\\_Modeling\\_Approach\\_for\\_Water-Quality\\_Management\\_to\\_Control\\_Pollution\\_Concentration\\_A\\_Case\\_Study\\_of\\_Ravi\\_River\\_Punjab\\_Pakistan/citatin](https://www.researchgate.net/publication/326971117_Modeling_Approach_for_Water-Quality_Management_to_Control_Pollution_Concentration_A_Case_Study_of_Ravi_River_Punjab_Pakistan/citatin)

<sup>14</sup> : J. Margat and J. van der Gun. (2013). "Groundwater around the World". Leiden, Netherlands: CRC Press/Balkem". [https://www.un-igrac.org/sites/default/files/resources/files/Groundwater\\_around\\_world.pdf](https://www.un-igrac.org/sites/default/files/resources/files/Groundwater_around_world.pdf)

<sup>15</sup> Zaman, Bint Sumia and Ahmad, Shaid. (2009). "Salinity and Waterlogging in the Indus Basin of Pakistan: Economic Loss to Agricultural Economy". Managing Natural Resources for Sustaining Future Agriculture, 1 (4).

<http://waterinfo.net.pk/sites/default/files/knowledge/Salinity%20and%20Waterlogging%20in%20the%20Indus%20Basin%20of%20Pakistan%20Economic%20Loss%20to%20Agricultural%20Economy.pdf>

<sup>16</sup> Staff Reporter. (May 11, 2018). "Toxic water in Punjab's Kot Asadullah village infamous for causing deformities". <https://tribune.com.pk/story/1707642/3-toxic-water-punjabs-kot-asadullah-village-infamous-causing->

and domestic units remains unchecked due to which water tables have fallen drastically in cities like Lahore<sup>17</sup>. Lastly, outdated and crumbling water supply lines also account for a huge amount of water loss<sup>18</sup>.

## Policy Recommendations

Pakistan can adopt effective management techniques to prepare itself for the water scarcity challenge;

1. The National Water Policy (2018) is a step in the right direction but political-will is required to depoliticize the issue of water to achieve an effective outcome<sup>19</sup>. The policy resonates a lack of the element of urgency due to the absence of an operational framework.
2. Models from countries such as Israel and Australia can be indigenized in the sectors of agriculture, industry and domestic water usage. For instance, drip irrigation, hydroponics, urban rain water catchments, drought resistant cropping, water desalination, water taxation, and community education programs regarding water conservation techniques.
3. To materialize the National Water Policy (2018) there is need to synergize the private sector with the national water agenda. With a public-private partnership and a conducive policy environment the needs of a diverse and enormous demographic of Pakistan can be met.
4. Lastly, it is necessary to raise awareness amongst consumers regarding the finite nature of water and the future stress on the resource due to climate change. Inclusion of chapters on water conservation in school text books, advertisements, and workshops for farmers and industrialist are some of soft measures. Taxation on water usage and imposition of fines for wastage are other procedures to alter social behaviors and attitudes towards the issue.

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deformities/; Ebrahim, T. Zofeen. (September 23, 2015). "Manchar Lake: Toxic water, dead fish fill Asia's largest freshwater body". Dawn. <https://www.dawn.com/news/1208624>

<sup>17</sup> Staff Reporter. (October 11, 2018). "Plunging groundwater levels forces Lahore to close taps". The Express Tribune. <https://tribune.com.pk/story/1823170/1-plunging-groundwater-levels-forces-lahore-close-taps/>

<sup>18</sup> Staff Reporter. (March 22, 2013). "Pakistan losing water resources due to poor infrastructure: experts". Pakistan Today. <https://www.pakistantoday.com.pk/2013/03/22/pakistan-losing-water-resources-due-to-poor-infrastructure-experts/>

<sup>19</sup> Government of Pakistan. (2018). 'National Water Policy'. Ministry of Water and Resources. <http://water.muett.edu.pk/wp-content/uploads/2018/08/National-Water-Policy.pdf>