# Gallup Pakistan Analysis of the Pakistan Mouza Census 2020

## Irrigation and Water course improvement schemes across mouzas

GALLUP PAKISTAN
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# PRESS RELEASE

Gallup Pakistan Analysis of Mauza Census 2020 data

**Tubewells and canals are the predominant sources of irrigation across mouzas, utilized by 49% and 44% respectively; in contrast, only 2% of mouzas have adopted modern technology, and 28% have implemented water course improvement schemes -** Gallup Pakistan Analysis of Mauza Census 2020 data

*(Islamabad), 9th October, 2024*

A recent comprehensive analysis conducted by Gallup Pakistan on the "*Pakistan Mouza Census of 2020*" by the Agricultural Census Wing, of the Pakistan Bureau of Statistics (PBS) provides key insights into socio-economic conditions, land use, and facilities available in rural areas across Pakistan. The Mouza Census 2020 marks the 50th anniversary of the first Mouza Census conducted in 1971, with the slogan "Data for Development." This significant exercise is an essential step in updating rural statistics and ensuring better land administration, development planning, and evidence-based policymaking.

This press release gives details on the types of irrigation methods used for cultivation across mouzas in Pakistan, as well as the degree to which water course improvement schemes had been implemented in 2020. We focus on the provincial and regional spread of major methods, and also delve into how the popularity of these irrigation methods varies, depending on the status of the mouzas.

The previous press release in this series can be accessed here.

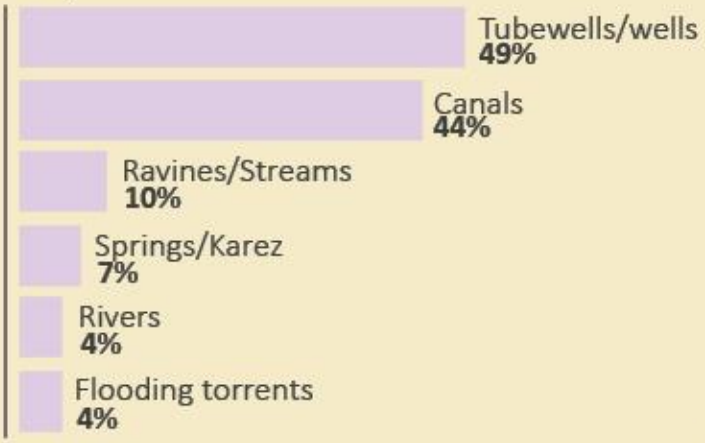
Rojah Sheikh, Assistant Manager Research at Gallup Pakistan says, "Deep diving into the Mouza Census 2020 data offers substantial benefits for Pakistan by providing a detailed understanding of rural socio-economic conditions. This granular data enables policymakers to identify gaps in services such as healthcare, education, and agricultural support, allowing for targeted interventions that directly improve rural livelihoods. It also informs better planning in the agricultural sector by highlighting the availability of resources like seeds, fertilizers, and irrigation, helping to boost productivity and food security. Using this data, we can guide infrastructure development by pinpointing areas lacking essential services such as electricity, roads, and communication networks, ensuring more equitable development across the country. By offering evidence-based insights, this census enables the fair allocation of government resources, ensuring that underserved regions receive the support they need. Overall, closely analyzing this data fosters more effective, sustainable, and inclusive development, improving the quality of life in rural communities."

# Gallup Pakistan Analysis of the Pakistan Mouza Census 2020

Irrigation and Water course improvement schemes across mouzas

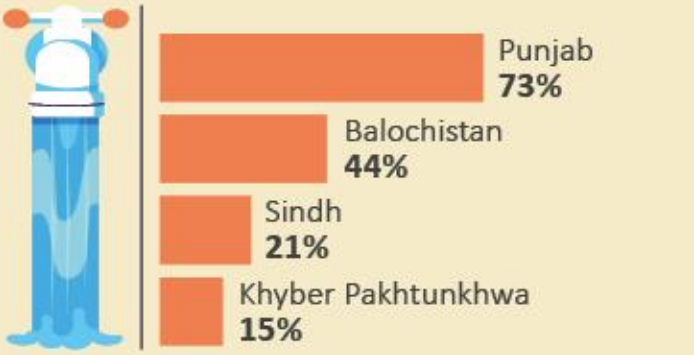
## Sources of Irrigation in Mouzas (2020 Census):

Nearly half of mouzas use tubewells/ wells (49%), followed by canals (44%), ravines/streams (10%), and springs/karez systems (7%). 4% also source water from rivers, and another 4% rely on flooding torrents. While 28% reported aridity, 2% report incorporating modern irrigation technology like drip or sprinklers



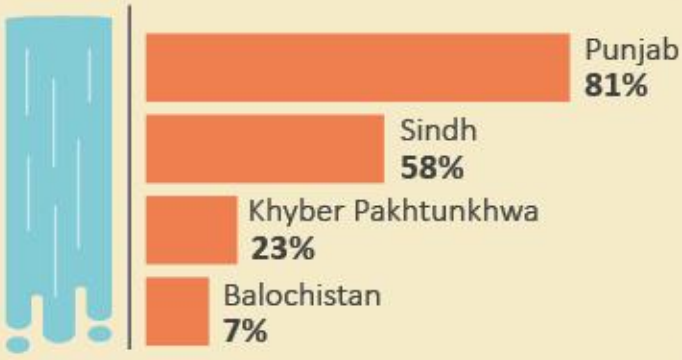

## Tubewells/Wells:

Most prevalent in Punjab (73%), followed by Balochistan (44%), Sindh (21%), and Khyber Pakhtunkhwa (15%).Found in 59% of partly urban, 53% of urban, and 50% of rural mouzas.




## Canal Irrigation:

Widely used in Punjab (81%) and Sindh (58%), but less common in Khyber Pakhtunkhwa (23%) and Balochistan (7%). Common in partly urban (60%) and rural (46%) mouzas.




*Water Course Improvement Schemes: Implemented by 28% of mouzas nationwide.*

*Source: Gallup Pakistan Analysis of Mouza Census 2020 data*

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# Key Findings:

**1. Sources of Irrigation in Mouzas (2020 Census):**

- Nearly half of mouzas use tubewells/wells, followed by canals (44%), ravines/streams (10%), and springs/karez systems (7%).
- 4% source water from rivers and another 4% rely on flooding torrents.
- 28% reported aridity, and 2% use modern irrigation technology like drip or sprinklers.

**2. Tubewells/Wells:**

- Most prevalent in Punjab (73%), followed by Balochistan (44%), Sindh (21%), and Khyber Pakhtunkhwa (15%).
- Found in 59% of partly urban, 53% of urban, and 50% of rural mouzas.

**3. Canal Irrigation:**

- Widely used in Punjab (81%) and Sindh (58%), but less common in Khyber Pakhtunkhwa (23%) and Balochistan (7%).
- Common in partly urban (60%) and rural (46%) mouzas.

**4. Water Course Improvement Schemes:**

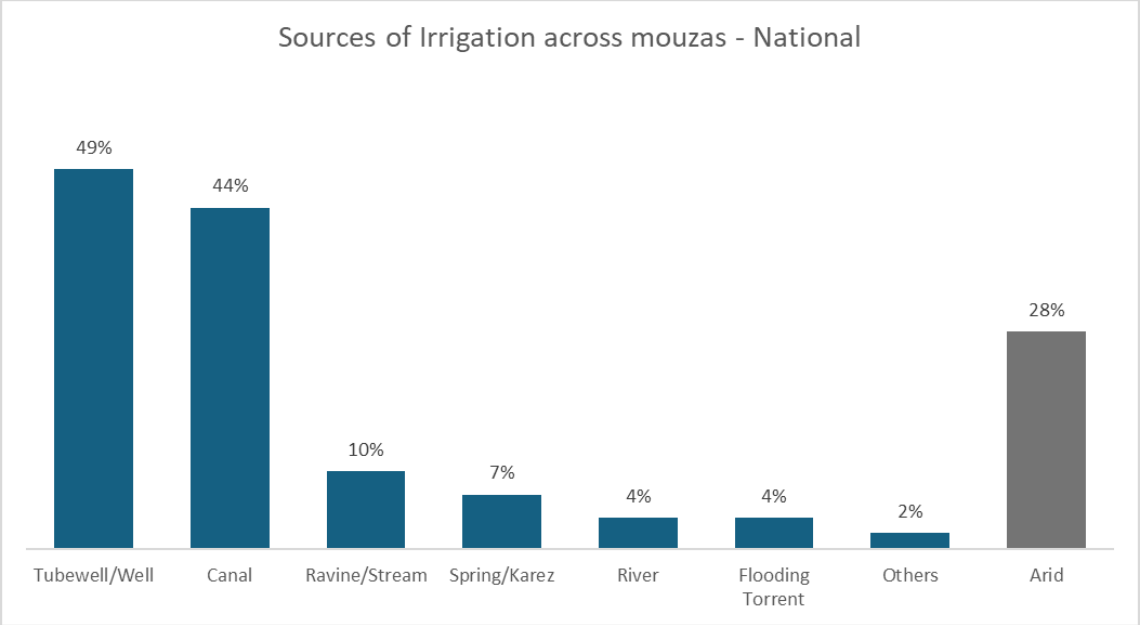
- Implemented by 28% of mouzas nationwide.
- Highest in Punjab (46%), followed by Sindh (29%), Khyber Pakhtunkhwa (6%), and Balochistan (1%).
- Most extensive in partly urban (38%) and rural (29%) mouzas.

# Sources of Irrigation in Mouzas:

Irrigation is vital for agriculture, ensuring consistent water supply to crops, especially in regions with unreliable rainfall. It enhances productivity, supports food security, and sustains livelihoods. Different regions rely on various sources of irrigation depending on climate and water availability. In humid regions, natural rainfall may suffice, while arid and semi-arid areas depend on groundwater (wells), river-fed canal systems, or reservoirs. Coastal areas may use desalination, while mountainous regions rely on snowmelt. Efficient methods like drip and sprinkler irrigation are crucial in water-scarce regions to conserve resources and ensure sustainable agricultural practices.

Out of the mouzas surveyed in the 2020 census, nearly half reported that tubewells and wells were a source of irrigation for them. The most common source after tubewells and wells was canals at 44%, followed by ravines and streams at 10%, and springs/karez systems at 7%. 4% of mouzas reported sourcing water for irrigation directly from rivers, and a similar proportion reported receiving water through flooding torrents. 2% of the mouzas reported other sources, while over a quarter (28%) reported aridity.

***Figure 1: Sources of irrigation to mouzas across Pakistan in 2020***




*Source: Mouza Census 2020 by the Agriculture Census Wing of Pakistan Bureau of Statistics (PBS), https://www.pbs.gov.pk/content/mouza-census-2020*

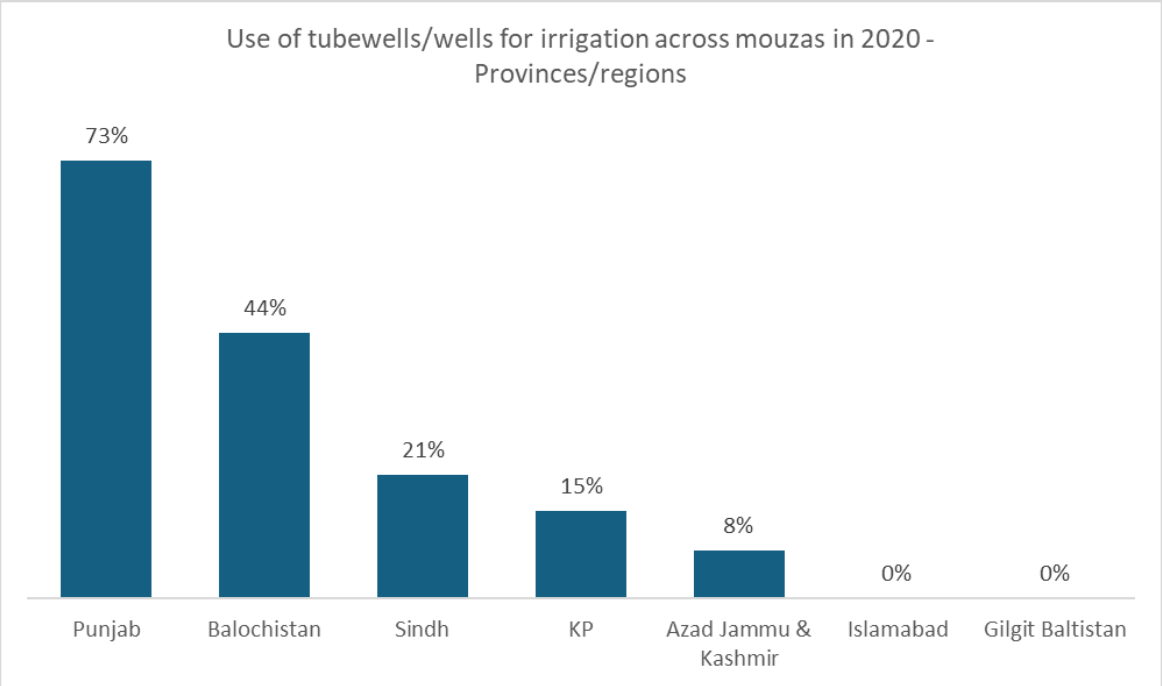
Around 2% of rural populated mouzas also reported the use of modern irrigation technology such as drip irrigation and sprinklers. [1]

[1] *Table 2.4, Mouza Census 2020 Country report, Agriculture Census Wing of Pakistan Bureau of Statistics (PBS)*

## 1. Tubewells & wells:

While tubewells and wells were the most popular source of irrigation across mouzas in Pakistan in 2020, this was especially true for the province of Punjab, where 73% mouzas reported them as a source of irrigation. In Balochistan, the proportion was 44%, and 21% in Sindh, while only 15% of mouzas in Khyber Pakhtunkhwa relied on tubewells and wells for irrigation purposes, likely due the difficulty of setting up the infrastructure on the mountainous terrain. Additionally, 8% of mouzas in Azad Jammu & Kashmir also used water from this source for irrigation. While a few mouzas in Islamabad and Gilgit Baltistan also reported using tubewells and wells for irrigation, it was an insignificant proportion of the total.

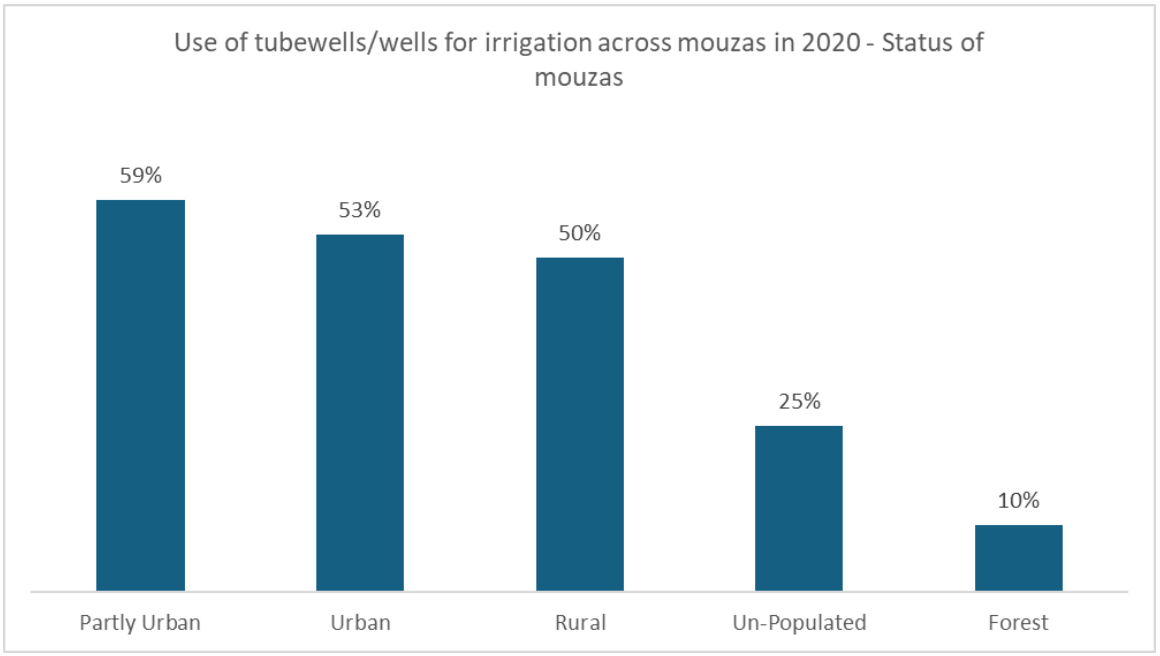
***Figure 2a: Tubewells as source of irrigation across mouzas in 2020 – Provinces/Regions***




*Source: Mouza Census 2020 by the Agriculture Census Wing of Pakistan Bureau of Statistics (PBS), https://www.pbs.gov.pk/content/mouza-census-2020*

When noting the status of mouzas, tubewells and wells were proportionally reported as a source of irrigation across partly urban (59%), urban (53%), as well as rural (50%) mouzas. Meanwhile 25% of unpopulated mouzas, and 10% of forest mouzas also reported tubewells/wells as a source of irrigation in the 2020 Pakistan mouza census.

***Figure 3a: Canals as source of irrigation across mouzas in 2020 – Provinces/Regions***

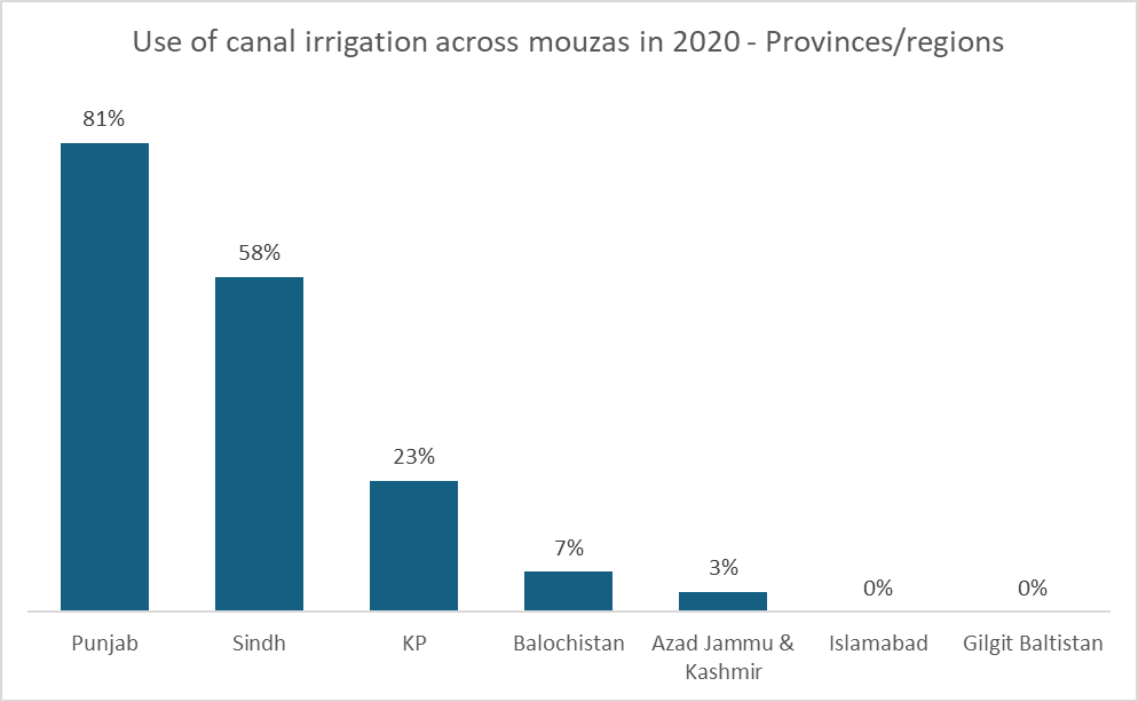



*Source: Mouza Census 2020 by the Agriculture Census Wing of Pakistan Bureau of Statistics (PBS), https://www.pbs.gov.pk/content/mouza-census-2020*

## 2. Canal irrigation:

Canal irrigation was the second most popular source of irrigation across mouzas in Pakistan in 2020, this was particularly true for the province of Punjab, where over four-fifths (81%) of the mouzas reported canals as a source of irrigation. In Sindh, this was true for nearly three-fifths (58%) of mouzas, and 23% in Khyber Pakhtunkhwa, while only 7% of mouzas in Balochistan reported relying on canal irrigation, possibly due to the largely semi-arid landscape. Additionally, 3% of mouzas in Azad Jammu & Kashmir also used water from this source for irrigation. Zero mouzas in Islamabad and Gilgit Baltistan reported using canal irrigation, in the 2020 Pakistan mouza census.

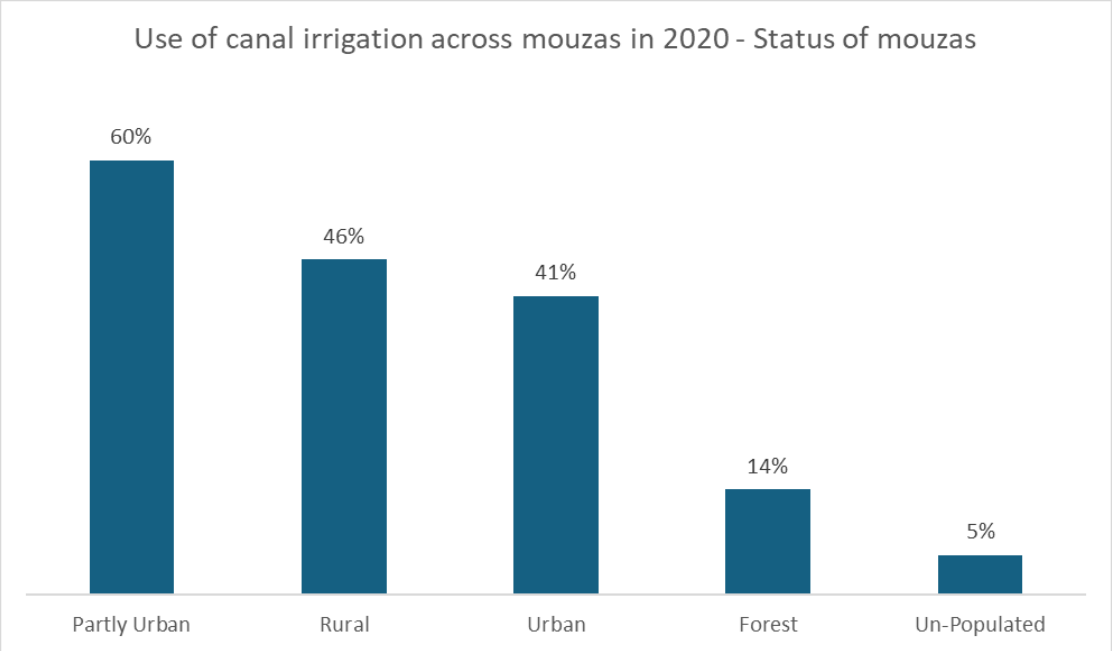
***Figure 3a: Canals as source of irrigation across mouzas in 2020 – Provinces/Regions***




*Source: Mouza Census 2020 by the Agriculture Census Wing of Pakistan Bureau of Statistics (PBS), https://www.pbs.gov.pk/content/mouza-census-2020*

When noting the status of mouzas, canal irrigation was most popular among partly urban mouzas with 60% reporting it as a source of irrigation, followed by rural mouzas (46%), then urban mouzas (41%). Meanwhile 14% of forest mouzas, and 5% of unpopulated mouzas also reported canals as a source of irrigation in the 2020 Pakistan mouza census.

***Figure 3a: Canals as source of irrigation across mouzas in 2020 – Provinces/Regions***




*Source: Mouza Census 2020 by the Agriculture Census Wing of Pakistan Bureau of Statistics (PBS), https://www.pbs.gov.pk/content/mouza-census-2020*

# Water Course Improvement Schemes:

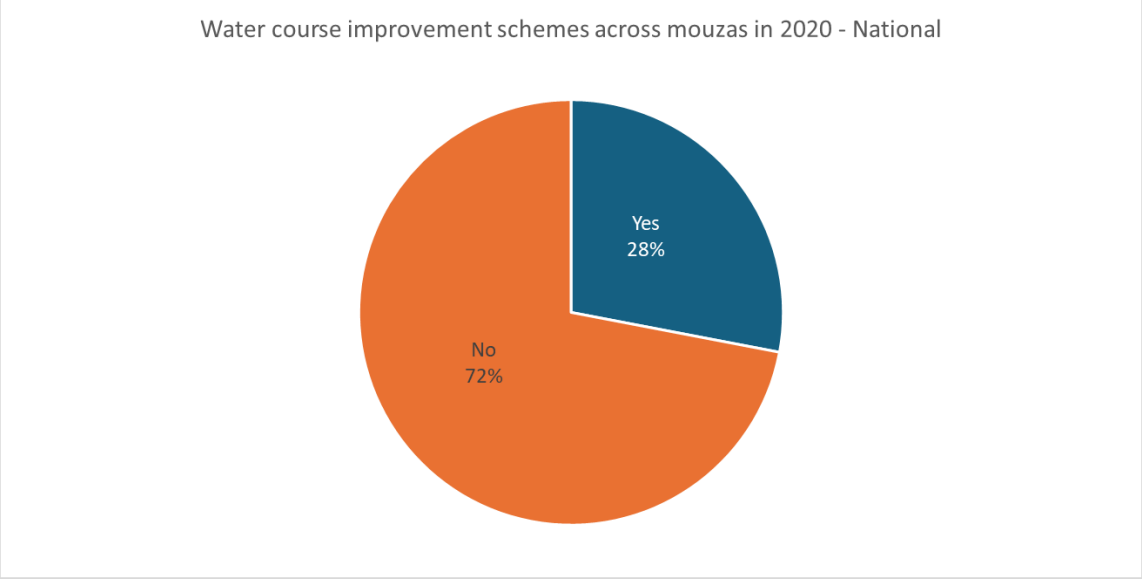
Water course improvement schemes aim to enhance irrigation efficiency by reducing water losses and improving water distribution in agriculture. These schemes involve lining water courses with materials like concrete to prevent seepage, repairing channels to minimize leaks, and installing control structures like gates to manage water flow. Other measures include laser land leveling for even water distribution and training farmers on efficient irrigation methods such as drip and sprinkler systems.

These improvements are critical for conserving water in regions where it is scarce, promoting equitable water distribution, and increasing crop yields. By reducing wastage and ensuring that water reaches fields more effectively, these schemes help support sustainable agricultural practices and boost farm productivity.

In Pakistan, where the agriculture sector is highly dependent on water from a vast canal irrigation system – with 44% of all mouzas in the country reporting as such – implementing water course improvement schemes can greatly benefit the agri-economy. By improving water use efficiency, these initiatives can help mitigate the effects of water scarcity, enhance crop production, and contribute to the country's food security. Efficient water management would also reduce conflicts over water access among farmers, ensuring more stable agricultural output and economic growth in rural areas.

According to the 2020 Pakistan Mouza Census, 28% of all mouzas across the country had implemented some form of water course improvement schemes.

***Figure 4a: Percentage of mouzas that implemented water course improvement schemes in 2020***

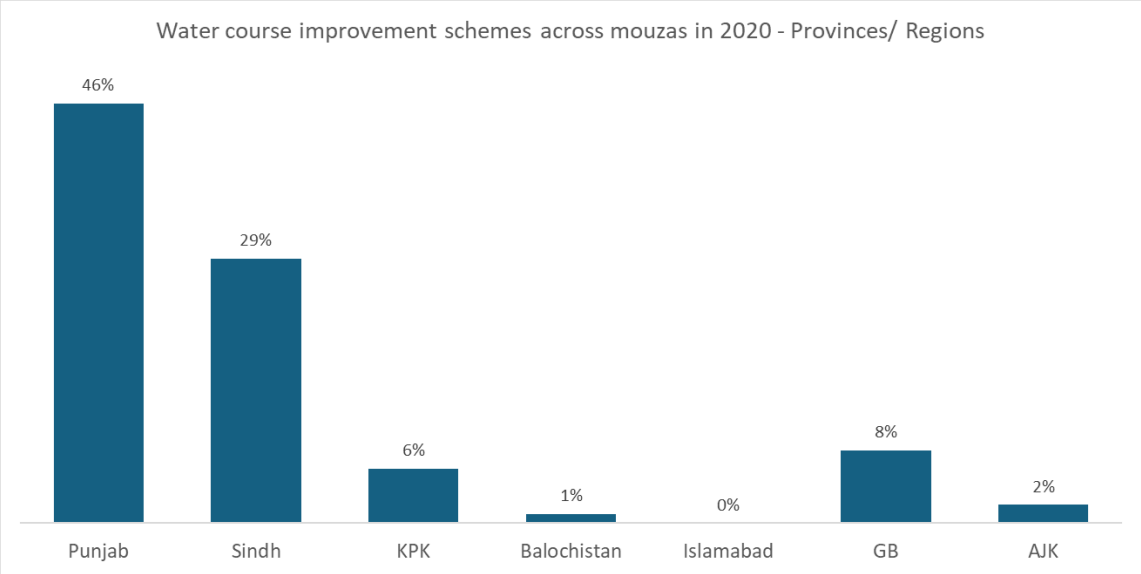



*Source: Mouza Census 2020 by the Agriculture Census Wing of Pakistan Bureau of Statistics (PBS), https://www.pbs.gov.pk/content/mouza-census-2020*

Nearly half (46%) of the mouzas in Punjab had implemented water course improvement schemes by 2020, which was the highest across provinces. This was true for 29% mouzas in Sindh, 6% in Khyber Pakhtunkhwa, and 1% in Balochistan. Across regions, 8% of mouzas in Gilgit Baltistan had done so, while only 2% of mouzas in Azad Jammu & Kashmir reported

as such. No mouzas in Islamabad were recorded to have implemented any form of water course improvement in the 2020 Pakistan Mouza Census.

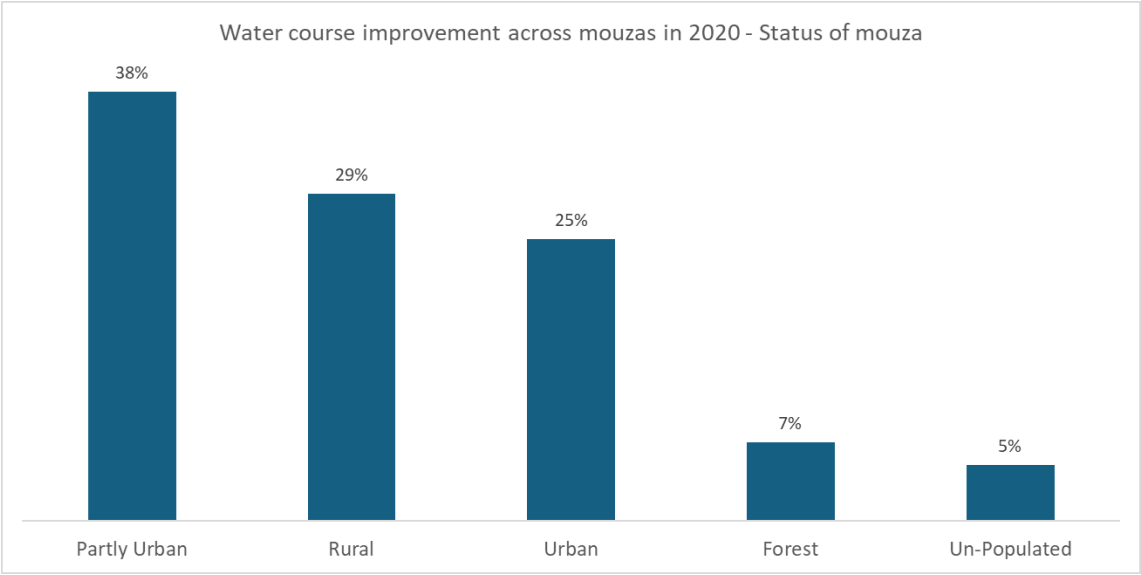
***Figure 4b: Percentage of mouzas that implemented water course improvement schemes in 2020 – Provinces/Regions***




*Source: Mouza Census 2020 by the Agriculture Census Wing of Pakistan Bureau of Statistics (PBS), https://www.pbs.gov.pk/content/mouza-census-2020*

When taking the status of mouzas into account, it appears that water course improvement schemes were most extensively implemented in partly urban mouzas, with 38% reporting as such. This was true for 29% of rural mouzas, 25% of urban mouzas, and 7% of forest mouzas. Surprisingly though, even 5% of un-populated mouzas reported to have incorporated water course improvement schemes in the 2020 Pakistan Mouza Census.

***Figure 4c: Percentage of mouzas that implemented water course improvement schemes in 2020 – Status of mouzas***




*Source: Mouza Census 2020 by the Agriculture Census Wing of Pakistan Bureau of Statistics (PBS), https://www.pbs.gov.pk/content/mouza-census-2020*

## Wish to Contribute to Gallup Big Data Analysis?

Gallup Pakistan is looking for collaboration with researchers to expand both the Big Data Analysis project as well as this study of national level data. If you have any ideas, please write to Bilal I Gilani, Project Director of the Big Data Analysis at Gallup Pakistan.

## Methodology:

**The data for this analysis is based on the tabulations from the raw data files for the *"Pakistan Mouza Census of 2020"* by the Agricultural Census Wing of the Pakistan Bureau of Statistics (PBS).**

The "Pakistan Mouza Census 2020*"* data by Pakistan Bureau of Statistics (PBS), can be accessed at: https://www.pbs.gov.pk/content/mouza-census-2020

For more survey data, see out website http://www.gallup.com.pk/ or contact Gallup Pakistan at caf@gallup.com.pk

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