

Factsheet

# Macro-Catchment Construction

Alleviating the threat of both flash flooding and water shortages in Western Afghanistan

## Background

Afghanistan experiences cyclical droughts, with the drought of 2018 being one of the most severe droughts in decades. Surface water resources are drying up and groundwater levels continue to decline at a rapid pace due to lack of recharge from rainfall/snow-melt and over-extraction. According to DACAAR's 2014 report on the National Groundwater Monitoring Wells Network, the 2003-14 data collected across 80 percent of river basins in Afghanistan (including Badghis Province) show that:

*“Since 1999, drought and over exploitation of groundwater for a variety of purposes... have significantly lowered the groundwater table and depleted aquifers... As a result, many of the shallow wells, springs, and kariz (traditional irrigation water supply system) have dried up. It has created concern regarding the future reliability and sustainability of groundwater resources... This vulnerability of the aquifer may not be reversible and it leads the country towards severe shortage of drinking water...”*

Facing a lack of surface water and declining groundwater in 2018, many people in rural areas, particularly those in Badghis Province, were displaced in a desperate search for drinking water. Hundreds of thousands of people were residing in camps for the internally displaced in both Badghis and Herat Provinces.

Following a year of extremely low precipitation attributed to La Nina climate phenomenon, Afghanistan entered a period of El Nino. According to FEWSNET, El Nino in Afghanistan is characterised by warmer temperatures and higher levels of precipitation. This means communities were being exposed to higher levels of rainfall instead of the usual snowfall. Degradation of forests and rangelands in Badghis due to years of deforestation has resulted in the erosion of topsoil. With the loss of plants and the soil they hold in place, rainfall is prone to runoff rather than infiltration. As Afghanistan enters the spring season, high levels of runoff cause large-scale flooding, loss of life and assets, and further displacement.

## Addressing the Problem

Under future climate change scenarios, periods of extreme drought and flooding are likely to increase in frequency. Faced with this challenge, World Vision asked the question: how can we capture runoff in order to recharge depleted groundwater and reduce the risk of flash flooding? In DACAAR's 2014 groundwater monitoring report, the key recommendations were:

1. Groundwater recharge by surface water during peak flowing for aquifer recharge and recovery (directing surface water into pits, trench, boreholes and infiltration basin);
2. Rain water harvesting;
3. Construction of infiltration ponds; and
4. Construction of water storage infrastructure (check dams, trenches, and capturing water by making storage reservoirs).

One of the policy principles in the Afghanistan National Water, Sanitation, and Hygiene (WASH) Policy 2016-2020 is “promoting and scaling up of ground water recharge.” According to the Ministry of Rural Rehabilitation and Development,

“This is to make sure, that the Ministry of Rural Rehabilitation and Development is highly pushing their partners to step up toward sustainable solutions for the water. Recharging is part of the sustainable solution. Meanwhile, we have raised these messages in many meetings; that our partners should invest upon a long term solution.”

*Malik Temory, National WASH Cluster Co-Lead, Ministry of Rural Rehabilitation and Development*

## World Vision’s Response

Over the past five years, with funding from the Australian Government, US Government, and private donors, World Vision has been constructing large water catchments, referred to as ‘macro-catchments.’ These macro-catchments capture and store rainfall, snow-melt, and floodwaters to help recharge groundwater used for irrigation and drinking. The macro-catchments, favored by local populations, consist of an inlet sited in a flood path to capture runoff, a large catchment pond with a diameter of approximately 60 metres and storage capacity of approximately 5652 cubic metres, and a permeable soil base to enable infiltration for groundwater recharge.



## IMPACT

In March 2019, World Vision visited one of the macro-catchments constructed in Khwaja Charom village of Qadis District in Badghis Province. The macro-catchment was constructed by World Vision in 2018 for capture of runoff in spring 2019. According to the community, the macro-catchment has been a significant success as it has prevented the flash flooding the communities usually experience and it has also raised the level of the water table.

In addition to flood prevention, villagers now consider this catchment a gift from God that has contributed to the rising level of the water table. “We didn’t realize that this catchment would help in improving our kariz systems and wells within our villages but it proved to be a miracle in raising the water in our wells and kariz systems,” said a local resident. World Vision sent technical staff to check the water levels in the wells and kariz systems and found that multiple wells and kariz systems which had previously dried now contained sufficient amounts of water. According to another community member, “This catchment has also assisted the livestock of the nomadic Kuchi people.”

During a conversation with local residents, they requested to increase the number of catchments in nearby villages which are also vulnerable to flood and drought. The villagers and community elders closed the meeting by saying, “May God protect you that you protect us from the bad.”

## CONTACT

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