

Report on Farmer to Farmer Experience Sharing



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1. Introduction

This report draws upon the knowledge and experience sharing workshop that was held in Yemen from 24 to 28 November 2013. The workshop brought together 40 farmers and 10 professionals active in the field of spate irrigation development and management in Ethiopia, Yemen and Sudan. The workshop participants shared their experiences in spate irrigation water management, conflict mitigation as well as operation and maintenance issues. On site discussions were also conducted during the field visits to spate diversion and distribution structures namely in Wadi Mawr and Wadi Zabid.

In this report, first the specific objectives of the workshop and field visits are presented. Next, the specific experiences shared are detailed. Finally some recommendations are made.

2. Objectives of the workshop

- Create platform for knowledge and experience sharing in management of spate irrigation systems among farmers and professionals from Ethiopia, Yemen and Sudan.
- Give opportunity to farmers and professionals from the three countries to visit some of the modern as well as traditional diversion and distribution structures.
- Promote networking and strengthen linkage among the farmers and professionals from the three countries.

3. Short Description of the Visited Schemes

The two schemes visited are Wadi Mawr and Wadi Zabid.

Wadi Mawr is one of the largest wadis (ephemeral rivers) systems in the Yemen Arab Republic (YAR). It has a catchment area of about 8 000 km². The mean annual flow of the wadi is estimated at 117 mm³. The total irrigated area is about 23,000 ha. The visit to Wadi Mawr included the two main canals that are about 20 kms long each and the main diversion structure. Along the main canals, several agricultural practices were observed: Banana plantation, mango and sorghum (see figure 1).



Figure 1. Banana, Mango and Sorghum plantations at Wadi Mawr

During the on-site discussions, it was evident that the banana plantation owners, who are usually big land lords are extracting huge amount of water from the wadi-head leaving little water to flow to the mid and downstream inhabited by the vast sorghum growing poor farmers two visited scheme. As to the diversion structure of Wadi Mawr, it is composed of two sediment traps, scour sluice gates for sediment removal, spill way to remove excess water and main gates supplying water to the two main canals (see figures 2 and 3).

During the field visit key questions were raised with regard to the functioning of the sediment trap and the water sharing among the users. Having two sediment traps is seen as an innovation because it makes desilting operation practically possible. As big

floods could quickly fill the sediment traps, while one sediment trap is operational and supplying water to the main canals, the second one could be flashed and disilted. The sediment traps complemented by the scour sluice gates have been very effective and the Wadi Mawr Scheme has not faced severe sedimentation problems as is the case in many spate irrigation schemes.

The water sharing in Wadi Mawr follows the water rights rule "al aala fil aala", which means upstream first. This is unfair and gives a lot of leverage to the upstream babana growing big farmers. In the old days, some 40 to 50 years ago, when only earthen diversion structures were used, the large floods have often broken these diversion structures and the downstream farmers have often received water. With the modern structures in place and the greedy rich farmers in the upstream, water flow to the downstream have been significantly curbed. In fact, the most downstream one-fourth irrigable areas (about 5000 ha) have been completely abandoned due to lack of spate flow.



Figure 2. Overview of Wadi Mawr diversion structure



Figure 3. Main canal with its settling basin of the Wadi Mawr scheme

Wadi Zabid is the second largest spate irrigation scheme in Yemen with a total estimated area of about 15,000 ha. As in the case of Wadi Mawr, the change in the pattern of the crop (banana cultivation instead for grain and forage crops) led to deprivation of water to the downstream farmers and overexploitation of the groundwater - in some areas the groundwater is as deep as 800 m. Banana crop occupies an area of about 3,600 ha.

The diversion structure in Wadi Zabid has the same components as that in Wadi Mawr. The key difference is that in Wadi zabid, the main canals get water directly from the Wadi. In Wadi Mawr as already discussed in the above culvert is used to supply water the irrigated areas on the right bank of the wadi. Figure 4 has some details on the main gates of Wadi Zabid.

There was a very detailed discussion on whether having two separate diversion structures supplying water to two independent canals (Wadi Zabid) is better than the use of one diversion structure supplemented with a culvert (Wadi Mawr). The general consensus was that the case of Wadi Zabid is better as given the high sediment content

of spate flows, the culvert could be blocked with sediment and is hence difficult to desilt. However, having two diversion structures is costly, and if sufficient head is given to the culvert, in times of financial constraints, one could opt for the Wadi Mawr situation.



Figure 4. View of the Wadi Zabid spate irrigation weirs

4. Experiences shared

The experiences shared between the farmers of the three countries can be categorized in to

- i. *WUA-WUA meeting*
- ii. *Visit to Wadi Mawr and Wadi Zabid*

4.1 WUA-WUA meeting

The meeting was held on 24/11/2013 at the coastal city of Alhodidah. During the meeting delegates from the three countries presented their experiences on water sharing, conflict resolutions and the service duration of the water user association officials. Accordingly, the Ethiopian delegates have witnessed that:

- i. In terms of the institutional strengths, the WUA of Ethiopia is the strongest one. This is mainly because;
 - a. The water user associations were able to ensure fair distribution of water between the upstream and downstream users. To ensure the fairness different water distribution techniques are utilized such as “Lottery Basis” and “Turn Basis”.
 - b. Elders and female headed household members are motivated by giving them priorities and avoiding night time turns.
 - c. The WUA chairperson is also motivated by allowing him the first turn during flood diversion.
 - d. Unlike to Ethiopian experience, the water distribution in Yemen is unfair as it ensures the most upstream users full right to divert the flood at any time.



Figure 5. Field bunds

- ii. Accordingly, the Sudanese delegates have presented two of the practiced experiences shared by the Ethiopian farmers during the Sudan workshop namely:
 - a. The first practiced experience, which has been gained from Ethiopia, is to establish social court at the water user association/ lowest governmental administration/kebele level. This court is acknowledged and empowered by the government and will be responsible for resolving water related conflicts. Furthermore, the court's decision is binding with no interference from the government.
 - b. The second practiced experience is to elongate the service life of the WUA chairman in to three years which was previously limited to a maximum of two years. This enables, to create a stable institution.

4.2 Visit to Wadi Mawr and Wadi Zabid

The schemes visited, Wadi Mawr (23,000 ha capacity) and Wadi Zabid (15,000 ha capacity) are sustainably constructed and the structures are impressive in terms of their design, construction quality and irrigation capacity. The Ethiopian farmers experience

in this regard is, to construct many small structures with an irrigation capacity of 500 ha. The other experience gained from Wadi Zabid is designing the weir as fuse plug in which the central part of the weir crest is made of earthen dyke structure which can easily be destroyed in cases of high floods. Furthermore, the construction of field bunds and the water delivery system within these spate systems is inspiring experience to share. Finally, the construction of soil and water conservation structures/stone bunds around the mountainous areas of the highlands is also very remarkable. By constructing these structures, it was able to increase the size of irrigable land around the highlands.



Figure 6. Mountainous bunds

5. Recommendations

The key recommendation here is, the experiences gained and shared are valuable. Some of them have started to be exercised like what is presented by the Sudanese farmers. Therefore, similar tour should be prepared by the Ethiopian delegates for esteemed experience sharing.

6. Acknowledgement

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