

Concept paper on Spate Irrigation and Irrigation sector development in Awaran District

Background

The area under spate irrigation (called *rodh kohi* in Khyberpakhtoonkha and Punjab, *sailaba or khushkaba* in Balochistan and *nai* in Sindh). Spate irrigation is widely practiced throughout 4 provinces but it has higher potential in Balochistan being out from the Indus based irrigation system. By most reliable estimate it is 1.4 M ha – or equivalent to 9% of the entire irrigated area in Pakistan. It covers the entire or major portions of the cultivable land in the districts of DI Khan, Tank, Kohat, Laki Marwat, Bannu (KPK), DG Khan, Rajanpur, Mianwali (Punjab), Bolan, Sibi, Jhal Magsi, Qila Saifullah, Loralai, Musakhel, Barkhan, Las Bela, Kharan, Awaran, Kech and Gwader Balochistan, Dadu, Larkana, Jamshoro, Karachi and Thatta (Sindh).

Geographically, in this 1.4 M ha area, there is widespread poverty, more than any other single area in Pakistan. This is related to the uncertainty which is inherent to spate irrigation, the absence of reliable drinking water supply and the remote location of spate areas in all provinces. Periods of drought are part of spate irrigation; they cause hardship and even the temporary depopulation of areas. The spate areas have high infant mortality, low literacy, least public amenities and school attendance and sometimes tensions between landlords and (hereditary) tenants.

In spite of the size of the area under spate irrigation and its importance in poverty alleviation, the areas are very much neglected and almost invisible in programs and policies of government and civil society. There has in several parts been a steady deterioration in water management, bringing the areas in a downward spiral. This deterioration is manifest in the construction of unauthorized water diversions, the silting up of the flood channels and the development of gullies distorting the hydraulics. In addition there has been deterioration in forestry resources, rangelands and livestock material.

There are however considerable opportunities to revive/ improve the productivity of the spate irrigated areas. Crop yields of the main spate irrigated in Pakistan (sorghum, millet, wheat, pulses) are low compared to international figures, whereas improved grain storage can reduce losses that are now at 6-20%. The spate areas are probably the most suitable area in the country for the cultivation of oilseeds. In addition there are a number of very promising crops to be developed by demonstration and improved marketing and processing, such as guar and sesame and other food legumes. Then there are promising minor crops – from area-specific vegetables and medicinal plants to truffle mushrooms. There is scope to improve forest production – either along river banks or in special fenced plots in the outwash areas. Livestock is an important and stable source of income and spate areas have produced important species, such as Bhag Nari, Sindhi Red Bull and Loghari Goat and Sheep. There is considerable potential scope to improve livestock production by improving indigenous stock, improved fodder and feed (such as molasse blocks and urea treatment) as well as rangeland management. Much more can be done to ameliorate drinking water supply by improved clay or plastic lined drinking water ponds for humans and livestock. Water management has been problematic. There has by the introduction and subsequent withdrawal of free/ subsidized earth moving equipment, resulting in a decline of local institutions. At the same time the effective co-management system of local government (under Revenue Department) and farmers that ensured the regulation and timely construction of the earthen structures (*Gham/kamara*) has eroded for a number of reasons, one of which is the changed powers of local government under devolution. As mentioned the basis for – water management has been in decline but there can be many low cost high impact improvements, such as reinforced earthen diversion bunds, fixed canal intakes, bed fixing, gully plugs, field intakes and overflow structures.

number of these interventions has been undertaken recently in some areas at considerable benefits.

Scope of Work

Awaran Situation Analysis

Awaran is a geographically large district in Balochistan if compare it with newly established districts of Washuk, Sherani and Harnai for example. The district is stretched on approximately 29000 square kms. The entire district is sizably populated and is dry in nature. There are two major rivers passing through the district. Naal Kaur in eastern side of the district headquarters Awaran and Mashkay Kaur. These Kaur or rivers are perennial in many reaches and water is diverted by traditional means of brush wood diversion bunds. In some cases river beds are divided among the farmers on left and right bank basis and construction of permanent structure is not allowed. It has been observed through field visits that irrigable land situated along the large rivers are owned by the influential segments of communities. Similarly there are hundreds more creeks, tributaries and small water sheds that generate flows in rains which is trapped by farmers for irrigation. Such creeks are locally called (chel). These chels are sometimes owned by a single owner are numbers of owners in many cases relatives. The flow is distributed within the chel by erecting earth deflectors locally called *Guaz* (the feeding channels). It has been further informed by the farmers that guaz (or) feeding canals are not much lengthy in their size and lost by feeding 3-5 large bunds vary in size 5-10 acres farmers. Field applications are found to be field to field irrigation by passing flow on the shallow side of (bund/field).

One chil or stream flows in similar way to further down during rainy season. The water is utilized from head to tail system by diverting the flow in upstream guaz that has certain numbers of bunds/fields. Once they are irrigated completely then the diversion bund is breached to let the flow into the next guaz or field.

The water distribution pattern is not very much complex. In cases if the rains are high, the diversion bunds constructed in the (chel) bed are eroded and finally the water reaches to the large scale bund at the tail end that are build to contain the entire water during a certain rain spell. It is observed that breaches of the irrigation fields are common due to absence of proper outlet structure to pass the access water from one to another. Almost all fields found breached and rehabilitated to get the water in next spate. Sleeping style construction of embankments of bunds/fields show to bear the hydraulic pressure once filled.

Almost entire human settlements through district or region are located along side the rivers or sloppy hill side where surface flow is catch to irrigate the lands. All the land patches are in the foothills of mountains and small catchments which are major source of irrigation water and seasonal ground water recharge to cater the drinking and animal water use. Local source informed that the ground water table is shallow ranging 20-150ft below the subsurface of soil through the district. Yet the water mining for economic purpose is not visible if one compare with Uthal in Bella where agriculture has been expanded 100% in past 20 years using ground source for irrigation which is recharged annually by Porali River Water Basin.

The area is tribal in nature and each village is headed by the headman locally called (mir or wadera). Sardars hardly exists because of the mix ethnicity and heterogeneous social organization.

Lands are distributed and held by the extended families or on the occupancy basis. The lands are reportedly registered in the cadastral record. Some parts in district e.g. landholding in Jhau tahsil is not registered.

The area lay in monsoon region and rains occurs mainly in Jun-sep and Feb-April every year. Main crops grown are sorghum and millet in Kharief where wheat, barley and guar are the main Rabbi crop. Dates palm orchards are common in many vallies. Farmers apply excessive water to their field and prefer to reserve the moisture for wheat and barley crops which is the staple food of the area.

Tenancy is common here due to big landholdings. The tenancy arrangements are fair. On flood irrigated land tenants is entitle to 1-4th of harvest and responsible for the labor only remaining

contribution is made by the owner including seeds, plough, and plugging of the fields and routine maintenance of the system. On Perennially irrigated agriculture tenant is entitled to 1-3 of the harvest and responsible for labor, maintenance and cleaning of water course and periodical field water application.

Almost entire Awaran district is rural in nature there are no urban settlements. Public amenities like schools, health facilities, road infrastructure is poorly managed. The entire district is not connected with National grid power supply. Extreme poverty and wide spread long drought spell from the last 7 years has further diminished the livelihoods opportunities. Earthquake of 2013 has added miseries in the daily life. Literacy rate is low among men and women.

Wealth indicators of the local population are low. 80% houses are built with dwarf palm leaves, bushes and woods. Public transport connecting rural villages to Awaran or Turbat or Lasbella is not sufficient. In rural villages hardly there are shops for daily needs and fresh supply and availability of vegetables and daily consumable is none existent. 99% humans apparently look malnourished. There is a need to make investments in livelihoods recovery specially dry lands irrigation systems and prepare the farmers to utilize rain runoff more efficiently. The investment will create job opportunities for the locals at their village level.

Small Scale Livelihoods Initiative

Small scale spate irrigation projects can be integrated and initiated with over all development plan at district level. Through small scale community driven interventions, new land can be brought under irrigation for example following activities are possible to be under taken while devising new proposal:

- Flow distributions structures a canal level
- Field to field inlet out outlet structures
- Lath Bandi (construction and rehabilitation of embankments around the spate fields to store water for the crops and gully plugging.
- Introduction of new crops like sesame, sorghum, grains and oilseeds and fodder, melon and musk melon in areas.
- Small scale local vegetable production and kitchen gardening.
- Farmers exchange visits from one spate irrigation area to other spate irrigation area or to other parts of the country where spate irrigation is practiced.
- Training of the farmers in new crops husbandry with seeds distribution.
- Village protection bunds where villages are threatened by the seasonal flood
- Intensive awareness campaigns in educational institution, government line departments and district governments.
- Establishment of local area spate irrigation network for lobbying for the spate irrigation investments and transparent services delivery.
- Seminar, symposia and workshop for mainstreaming spate in donor, government, INGOs and NGOs for new investments.
- Publication of papers, pamphlets and brochure and papers bringing together knowledge and experience in spate irrigation.
- Exchange of information on improved water management, local engineering, livestock and domestic water supply (earthen reservoirs), animal feeding reservoirs in the range land livestock management.
- Construction of drinking water supply schemes
- Landscape development by broad costing seeds and creating water reservoir and range land development
- Land reclamation efforts by gabion structures
- Introduction of new livestock breeds in the area
- Females/Male skill training in different trades and tools distributions
- Enterprise development through circulatory funds controlled by the local area board.
- Supporting students research at the University level (Marine University Uthal can be taken) for research in spate irrigation systems.