

Mission Rep.

Shamalan Canal Socio-Economic Study

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Introduction

1. Objectives

The Shamalan Canal Study examines the social impact of damage to the Shamalan irrigation canal, which stretches from Lashkar Gah, the capital of Helmand Province, southwesterly for some 70 km. Roughly paralleling the right bank of the Helmand River, it terminates at Old Shamalan Village, from which it takes its name. This irrigation canal waters some 24,000 hectares of land and supports more than 18,000 farming families. But currently, it is operating at less than 40% of its original design capacity and is threatened with complete destruction through erosion by the meandering Helmand River. The aim of this study is to assess and make recommendations regarding the most urgent and cost-effective short- and long-term measures to increase the canal's capacity. The solutions proposed -- first by a companion engineering study prepared by UNOPS, and considered here -- involve building protective dikes and de-silting, and widening the canal bed. As funds for reconstruction are necessarily limited, our intention is to indicate ways to spend them so as to benefit the largest number of most vulnerable people. The glory days of heavy engineering will never be replicated. Still, using more modest, sustainable technology, the ultimate goal should be to return the Shamalan valley to its former prosperity as the bread and fruit basket of Afghanistan, and to benefit and improve the economy of Lashkar Gah, as well as Helmand Province as a whole. By improving the economic viability of licit agricultural production, any reconstruction project should fit within an integrated campaign to wean Helmand Province away from poppy production. Recommendations on crop substitution will constitute an additional element of this report.

2. Research Staff and Methodology

The research team consisted of the two co-directors, Candelario Saenz, PhD., of Wellesley College, and Kandahar University Professor Faiz ur-Rahman. They were assisted by translator Khan Mohammad. Engineer Faiz ur-Rahman teaches in the Faculty of Agriculture at Kandahar University and served as a field researcher in the UNDCP annual Opium Poppy Survey in 2001 and 2002. Candelario Saenz has conducted agricultural development research in Niger, West Africa in conjunction with the Institute for Development Anthropology in Binghamton, New York.

The research team arrived in Lashkar Gah, provincial capital and economic hub of Helmand Province, on Monday, September 9, and was lodged in the guest house of the provincial governor, Shir Mohammad. We thank Governor Shir Mohammed and his staff for providing this accommodation, together with their protection and such deeply appreciated amenities as a bottomless supply of hot tea.

Over four weeks, the team made daily trips to villages along the Shamalan Canal, and organized village-level discussions, or *shuras*, in which farmers were encouraged to present their problems and points of view in an open dialogue with the researchers.

The research team also elicited specific information on land ownership and share-cropping tenure, crop production and associated costs, acreage and yield, relative importance of different types of irrigation, availability of water, and the need for paid labor in cultivation and harvesting. Farmers were also asked about constraints and opportunities faced in improving their productivity through crop rotation, inter-cropping with nitrogen-fixing plants, and the use of fertilizer and high yield varieties of cereal grains. As indebtedness is an important constraint throughout Afghanistan, farmers were also asked about credit arrangements they might use to purchase fertilizer or insecticides, or to cover labor costs.

The study addressed the issue of social equity of land tenure and distribution, so that any improvements to the canal can be designed so as to benefit a cross-section of the population, and not just a few wealthy land-owners. Our starting point was the economic conclusions of the intensive and well-conceived Helmand Initiative Socio-Economic Survey, undertaken by UNDP in April 2000. However, our methodology differed in that we did not assume *a priori* that owning less than 2 or 3 *jeribs* of arable land (0.5 hectare), or farming someone else's land under the *bazgar* tenure system, automatically implies poverty. Rather, we examined patterns of consumption and lifestyle along with a focused study of indigenous systems of political and economic organization and left the determination of poverty or deprivation as the dependant variable.

Finally, farmers were asked about alternative crops within their own cultural traditions, for example: cumin or wild plantain to serve the Indian medicinal market. They were sounded as to their potential interest in cultivating new medicinal plants, like Echinacea and St. John's Wort to supply the growing Western market for organic medicinal tinctures, or else roses or lavender for aromatic oil production. The crucial factor in any prospective introduction of new crops would of course be raw material supply, credit, and marketability. ! certain!

We opted for an intensive anthropological approach, as opposed to the more common quantitative sociological methodology, because the questions we wished to address were sufficiently "subtle, and occasionally sensitive", to warrant in-depth attention and the time it takes to elicit honest answers. At the same time, the zones of particular interest along the canal were sufficiently localized to make large swathes of data unnecessary.

The first week of study (Sept. 12-14) was aimed at broadly surveying the damaged areas of the canal, the feeder canal system and the agricultural lands and villages. In this initial survey we were greatly aided by Engineer Hajji Abdullah, of the Helmand Arghandab Valley Authority, who personally guided us through the complex routing and topography of the Shamalan canal. Then we went back and re-visited areas of concern, focusing on six specific zones, as detailed below.

3. Summary of recommendations

The engineering study of the Shamalan Canal prepared by UNOPS and submitted on August 6, 2002 identified nine major repairs needed to restore the system to its pre-Soviet invasion capacity. At an August meeting with IOM's Diego Osario and attended by Afghans for Civil Society staff, UNOPS was hesitant to prioritize this list, or indicate which repairs should be done alone if sufficient funding was not available to complete the whole work program. **Out of the Afghans for Civil Society socio-economic study emerged four areas in need of urgent attention, one which so endangers the entire Shamalan irrigation system that work should be commenced immediately.** We are annexing a fifth and sixth recommendation related to opium poppy cultivation, since an unspoken objective of any work on the Shamalan Canal should be to wean Helmand Province away from the poppy economy.

Intake protection head works?

- A) **Build a dyke along the bank of the Helmand River, between Hajji Wazir Village (Shamalan Station 28 + 250) and Hajji Mahmud Jan Village (Shamalan Station 31 + 320) immediately.** The meandering Helmand River has encroached to within a mere 50 meters of the canal here, and threatens to breach it during this winter's flood season. This would render the entire rest of the canal inoperable, depriving an estimated 16,000 families of irrigation water, washing away two villages, and drastically increasing the cost of subsequent repairs. This work must be begun as soon as possible, since winter flooding – expected in December – will render it impossible.
- B) **Rebuild the dyke and repair the drainage canal system at station 55 + 878.** Here the Helmand has not meandered quite so close (250 meters), still, the danger to the canal and local villages is clear and present. This job could be undertaken after this year's flood.
- C) **Widen and de-silt the canal after station 38.** This will significantly increase the flow of water to the entire lower half of the canal. This is a low-technology job, and could employ a large number of local people as laborers. A local tradition of cleaning feeder canals via volunteer labor called up by village water monitors could be built upon.
- D) **Build a new shunt canal connecting Shamalan Village to Shamalan Canal at station 63 + 600.** This would restore water to the desperately impoverished canal terminus area, and might induce the return of dozens of refugee families.
- E) **Make any repair to the Shamalan Canal contingent on a written pledge by beneficiaries that they will not plant poppy on their newly irrigated lands.** This pledge should be developed in consultation with village and district *shuras*, or tribal councils, and should be formally entered into by elders all the way down to the village level.
- F) **Fund innovative crop-substitution programs** that include some initial assistance in obtaining seed/seedlings and in accessing markets in Afghanistan or abroad. Shamalan Valley farmers are eager to innovate, so long as they have some evidence or guarantee that eg. new seeds will provide increased yield ~~and~~ find a market.

Special measures should be employed to...

DYKE

DYKE AND DRAIN

CLEANING 32 KM

NEW CANAL DRAINAGE

Background

The Old Shamalan Canal (referred to below as the Shamalan Canal or the Shamalan) is part of a modern irrigation system built in ~~1959~~ ^{1946 onward} to restore the Helmand River Valley to the intensive agricultural productivity that it had enjoyed in earlier times. Before 1959, the Helmand Valley had been greatly affected by salination, which leaves a white crust on the land surface and greatly reduces agricultural productivity. This modern canal system solved the problem by integrating drainage canals in tandem with the irrigation canals, so as to allow the flooding and draining of land to remove accumulated salt. The new system also increased the land area open to intensive irrigation through a system of tunnels and water siphons which bypass topographical obstructions and seasonal streams. Thus water could be made to reach previously inaccessible land at higher elevations. ?

The Helmand River canal system is of a highly centralized type, using a modern hardened diversion dam and a high capacity main canal, the Boghra (71 m³/s design capacity), with modern control stations and diversion intakes. Such a set-up provides a reliable and high-volume water supply to our project canal, the Shamalan (reputedly 20 m³/s design capacity). Once it branches off from the Boghra, the Shamalan closely parallels the Helmand River, running along its right bank, and waters an area of some 80,000 *jeribs* (16,000 hectares) of fertile and intensively-cultivated (double-cropped) land. It terminates some 70 kilometers to the southwest, at Shamalan Village, which was once famous in the region for the excellent quality of its locally dried raisins. The raisin drying buildings now lie abandoned and the vineyards are deserted, because the canal has been breached near its end by the meandering Helmand River. Boghra 71 m³/s Shamalan 20 m³/s

The Shamalan canal is currently operating at some 40 percent (as estimated by the deficit in irrigation water reported by farmers) of its original design capacity. The shortfall is in part caused by the current three-year drought, but more importantly because of 1) damage to the canal incurred during the Soviet occupation, mainly in the destruction of control stations and water gates by tank and artillery fire and demolition charges and 2) from lack of routine maintenance during and since the war, which has resulted in massive silting, reduction in the width of channels, and undercutting of the supporting structures of control stations. Currently, none of the water control gates on the Shamalan canal is functioning properly, and most are actually missing. As a result, control and distribution of the water supply is accomplished by indirect methods, such as throttling the main intake gates or opening and closing the small feeder-canal gates according to a time rotation process, which drastically reduces the efficiency of water transfer and distribution. In other words, the Shamalan Canal is run with no effective water control throughout its distribution zone. Wrong

An even more severe problem is caused by the uncontrolled meandering of the Helmand River, which frequently changes direction, creating oxbows and convoluted flow patterns that sometimes bring the full force of the river to bear directly and at right angles to the soft alluvial banks. An extensive dyke system was in place to stabilize the river, but 25 years without maintenance have left it eroded and undermined. As a result, the

uncontrolled shifts in the flow of the Helmand have caused several major breaches to the Shamalan canal. Two major ones, at stations Stations 13+500 and 15+000 have completely severed the lower Shamalan Canal from its intake at the Boghra Main Canal. The breaches are severe and the river erosion continues unchecked, making restoration of the system and its associated dykes a major capital undertaking – perhaps neither cost-effective nor possible under Afghanistan's current economic conditions. However, smaller-scale repairs, carefully targeted to the most damaged portions of the canal, together with efficient use of local barrage techniques and village-level cleaning and widening programs can significantly increase the efficiency and safety of the Shamalan Canal.

BREACHES AT 13+500 & 15+000

The Study Zones

Our initial survey of the canal led us to divide the Shamalan command area into six study zones. 1) the Intake, 2) the Breach Zone, 3) the Lashkar Gah-Shamalan Canal Shunt Zone, 4) the 1st Zone of Imminent Erosion Danger, 5) the 2nd Zone of Imminent Erosion Danger, and 6) the Shamalan Terminus. The following examination of these zones is accompanied by a few case studies. They depict conditions in a selection of a total of 24 villages and small settlements surveyed by the researchers during this month-long survey of social and economic conditions in the Shamalan Canal command area. These cases helped inform the recommendations outlined below, as well as some supplementary conclusions, which ought to be taken into account when undertaking any restoration work on the canal.

1. Zone 1: The Intake

This area, between Control Station 0 and Station 10 (kilometer 10 of the canal) is the only fully-functioning segment of the Shamalan Canal. Here, the water supply is reliable – if reduced due to the drought, now in its third year. Still, it is sufficient to have allowed the preservation of significant capital in fruit trees and grape vines. For example, in Basharan Village just upstream from Station 10, we spoke to farmers in a lush – to our eyes Eden-like – garden of pomegranate, peach, plum, apple and fig trees, adorned with green grass and rose bushes, as well as a large flock of free-ranging turkeys.

In this zone, ^{st. 0 to st. 10} the canal does need cleaning, up to one meter in depth. It should also be widened by as much as one meter on each side, in order to restore full flow. A large waste way (drainage) canal by Basharan village, which functions as a river dike, should have its banks reinforced with gabions to prevent recurrent flooding in Basaharan village. ?

These are perhaps not the highest-priority needs identified by this study, but they are worth signaling as significant problems. They could be dealt with, moreover, quite cheaply, by mobilizing village labor through the local *shura*, and a traditional institution for calling up voluntary labor known as *hashar*.

Station 10 is also the intake point for the smaller New Shamalan Canal, which irrigates the higher land between the Shamalan and the desert that borders the Helmand Valley. De-silting the canal bed between Station 00 and Station 10 would improve flow and efficiency to the New Shamalan Canal system. This improvement would help farmers in the Zone 2 Breach Area, who now have to depend on the New Shamalan canal to replace irrigation water formerly provided by the main Shamalan canal.

2. Zone 2: The Breach

After Station 10, the main system has been breached, just beyond Station 13+500 (13km plus 500m) and at Station 15, by severe and dramatic erosion damage to the Old Shamalan. Here the canal runs some 15 meters above the river level in an escarpment of soft alluvial soil. As part of the original design of the canal system, these potential breach zones were once protected by dikes of compacted gravel.^{No} But lack of maintenance during the 1980s – when Afghanistan was occupied with repelling the Soviet invasion – led to the deterioration of these dikes and their ultimate destruction by the powerful Helmand River around 1990 and 1992.

As a result, the now-unchecked Helmand has severely eroded once-productive agricultural land from Station 10 through Station 38, between the Shamalan and the right bank of the Helmand. Land not literally eaten away has been deprived of canal water, since the breaches in the main canal divert its water back into the river. Now, land lying at higher elevations on the right (desert side) bank of the Shamalan is partly irrigated with water from the New Shamalan Canal. However, its design capacity is limited, and much of the irrigation water used on land in the Breach Zone must be supplemented by tube wells fitted with submersible pumps.

3. Zone 3: The Lashkar Gah/Shamalan Canal Shunt

Note: this zone is not mentioned in the UNOPS Engineering Report.

Between 1992 and 1996, there was absolutely no irrigation water to be had in the Shamalan Canal after Station 10. Thus some 80,000 *jeribs* (16,000 hectares) of land were left dry. This disaster was eventually mitigated through the construction of the Lashkar Gah/Shamalan Helmand River barrage, and the excavation of the 6 kilometer-long Lashkar Gah/Shamalan Canal Shunt. This shunt, when working properly, provides up to 11 m³/s of water to the Old Shamalan with an intake point at Station 25.

Yet this was never better than a stop-gap solution. And at the new Station 25 intake, the Helmand River's elevation is already lower than it is closer to Lashkar Gah, so the water entering the Shamalan Canal at Station 25 is actually below the level of the fields until Station 28+250. Only at this point does the Shamalan come online again as a source of irrigation water – and only for fields on the lower (left) bank of the canal.

The Lashkar Gah/Shamalan Canal Shunt was an appropriate-technology and bearable-cost solution to the massive destruction of the original canal system near Stations 13 and 15. The problem is that the water-diversion barrage on the Helmand River is relatively weak: it was constructed of hand fabricated (wire mesh and gravel) gabions, and is vulnerable to winter flooding on the Helmand River. As it is, in years when the floods are high, this barrage has to be rebuilt by volunteer labor.

Engineer Fazal Omar, of UNOPS in Kandahar, estimates that constructing a permanent barrage would increase flow into the Shamalan intake from the current 10 m³/s to as

much as 15 m³/s, thus substantially restoring the Shamalan canal system after Station 28+250.

Under current conditions, the families living in the area between the Helmand River and the non-functional part of the Shamalan have no access to water from the canal system, and are forced to rely on motor pumping from tube wells. Farmers on the higher right bank of the ruined canal can get irrigation water allocations from the New Shamalan during the winter high water season, but not generally in the summer low water season. For farmers in this region, the only real solution to the shortage of summer irrigation water would be a restoration of the original canal system by repairing the breaches at stations 13 and 15. Our research team judges this heavy-engineering solution to be not cost-effective or sustainable at this time.

Case 1: Mahmud Omar Village, Zone 3. Six brothers share an estate of 68 *jeribs* (13.6 hectares), which was parceled out after the death of their father in Pakistan. Once shares were allocated to their mother and two sisters, each brother was left with 6 *jeribs* (1.2 hectares). They get no water from either the Old Shamalan or the New Shamalan Canals in the low-water summer planting season. Instead, they pump water from a tube well, and when available, from a canal drain, using an 18 hp diesel pump with a 4" distribution pipe. In the winter planting season, they get water from the New Shamalan Canal, but only 2 ½ hours of water per 7 *jeribs*, when they really need 3 ½ hours for that much land; so they have to make up the difference with their motor pump.

WATER

The brothers just returned from Pakistan last year, where they were refugees. They own two good tractors, one purchased with money saved through work in Pakistan and the other purchased locally. The brothers generate a good income by hiring themselves out with the tractors, which they use to offset their losses as they attempt to restart profitable production on their land. In 2001, they lost the complete production of their summer cotton crop, after the Bust gin in Lashkar Gah defaulted on its payments to growers in the wake of the Taliban collapse. In the winter planting season, they decided to concentrate on opium poppy in an attempt to recoup their losses from cotton. Then their opium crop had to be destroyed on orders from the post-Taliban administration and, they report, a promised compensation of \$350 per *jerib* was never paid. The brother's tractor was also contracted by the new authorities to help in plowing under other opium fields in the area, and they were never paid their promised fee of Af400,000 per *jerib* for this work. They did sell some maize, wheat, melon, okra and tomato in the Lashkar Gah market. But this did not cover their expenses, and the brothers say they had to borrow Af100,000,000 or about \$2000 this year. This money was, they said, obtained from relatives in Pakistan. Notwithstanding the brothers negative cash flow to date, they have rebuilt and refurbished their formerly abandoned houses, and they are completing work on a large new house for their eldest brother, who intends to move back from Pakistan on its completion.

The brothers retain six *bazgar* tenants, one for each six-*jerib* portion. They have also been replanting their orchards and grape vines, but currently only produce a small amount

of fruit for local use. They said that the orchards were only being kept alive, but not sufficiently watered for full productivity. This they hope to achieve in the future when, they trust, rains will return and the water supply will increase.

When asked about their wealth and lifestyle, they replied that they lived essentially like their *bazgars*, with whom they share their resources. They all, *bazgars* and land-owners alike, subsist on the same diet of bread, and potatoes or okra cooked in ghee, with meat perhaps twice a month, duck eggs in ghee perhaps twice a week, and tea 4 times a day. When asked what they needed most they answered, 1) more irrigation water, 2) hybrid high-yield seeds, 3) a school, 4) improved farm-to-market roads, and perhaps also electricity and a hospital. If they had more water and better seeds, they could produce more and live better, they concluded.

4. Zone 4: The First Zone of Imminent Erosion.

Starting at Station 28+250, the Helmand River's course has shifted to within 50m of the Shamalan Canal. The closest point is just before Hajji Wazir Village, on the left bank of the Shamalan. Feeder canals, waste-way canals, dykes, as well as 300 *jeribs* (60 hectares) of irrigated land and several houses have been simply washed away, to melt into the shapeless river-bed silt. Another 300 *jeribs* (60 hectares) are in imminent danger, along with a number of mud-brick homes, which are severely undermined or have already begun falling down on their inhabitants.

The results of a continuation of this erosion would be disastrous to the economy of the whole Qala Bust agricultural district, which comprises the Shamalan command area, as well as to the entire Helmand Valley. More than 15,000 families are directly threatened by the impending breach of the canal. Most of their lands would become unusable; many would be forced to move or seek subsistence elsewhere, flooding the already frighteningly large population of Afghan displaced people. Such a major economic disaster would certainly have indirect effects on an even larger number of people throughout southern Helmand Province.

We therefore believe that stabilizing the Helmand River at this point is of the highest priority. Timing, moreover, is critical. If the necessary dyke and diversion channels are to be constructed at this absolutely crucial location, work must begin immediately, before the onset of the winter rains. The river begins to rise in December and reaches its full winter flow by mid-January, at which point heavy work will not be feasible.

Apart from a new protective dyke and a diversion channel or channels, this station also needs three radial gates: two for feeder canals and one for the waste-way. The waste-way also needs to be reconstructed as part of the dike reconstruction, since the waste-way bank acts as part of the dike system.

At Station 31+320, just 3 kilometers upstream (Hajji Mahmud Jan Village) and the nearby Government Farms, there is another erosion point. 400 *jeribs* (80 hectares) of

land have been washed away; as well as the whole feeder canal system and the waste-way canal, which also serves as a dyke against river erosion. Another 300 *jeribs* (60 hectares) are in imminent danger from this year's flood. As at Hajji Wazir village, the meandering Helmand River is approaching to within 50 meters of the main Shamalan Canal, water-logging over 500 *jeribs* (100 hectares) of land and destroying the drainage canal, which acts as a dyke and also as a supplementary source of water for irrigation.

The original dyke and associated waste-way must be reconstructed in order to return the 500 hectares of land to production, and to protect the main Shamalan Canal from destruction at this point. If the canal is breached here, some 75,000 *jeribs* (15,000 hectares) of land will be deprived of canal irrigation.

The problem at both of these locations is extremely serious. The action of the Helmand River threatens not only the livelihood of the farmers in Hajji Wazir and Hajji Mahmud Jan Villages, whose land has already been washed away in whole or in part, but also the livelihood of some 15,500 more agricultural families in this zone. If the Shamalan is breached here, they will all be deprived of irrigation water, and may well be forced to migrate from the region.

Starting at Station 38, silting of the canal bed and narrowing of the channel due to the lack of maintenance over the past twenty years has resulted in drastically reduced water flow into the lower Shamalan Canal. In order to get any water flow at all past this choke point, the water level in the canal is drastically increased (well over design capacity) for a specific period. This is achieved by forbidding farmers in the upper canal zones from using any water for the given number of days. The need for such an inefficient solution is caused of course by the heavily silted and narrowed condition of the canal, but also by the lack of any functioning control gates in the canal system after the Lashkar Gah/Shamalan Canal Shunt intake at Station 25.

Case 2: Hajji Mahmud Jan Village, Zone 4. A prosperous-looking village with a spacious, cool and nicely whitewashed guest house with fanciful drawings of cherry, pomegranate, apple and fig trees on the walls. The villagers have lost 550 *jeribs* (110 hectares) of land – of an original 700 *jeribs* (140 hectares) – due the severe Helmand River erosion at Station 31+320. Village elder Hajji Mahmud Jan and his four brothers and three cousins once owned 80 *jeribs* (16 hectares) among them, but after the erosion they were left with 30 total (6 hectares), or some 3 *jeribs* each. There are 40 households in the village, each holding some 3 *jeribs* or less per household. The village can support no *bazgars*, yet the population owns 200 cows, an average of 5 cows per household – far higher than the norm.

Upon closer scrutiny, other aspects of this household's life-style didn't add up. Hajji Mahmud Jan, who farms a mere 3 *jeribs*, owns a Toyota 4-wheel drive pick up. The village, given the loss of more than 75% of its arable land, should be a graveyard. And yet the place looked clean and relatively prosperous, and we were served an excellent lunch of duck eggs fried in ghee, yogurt, soured milk and the local flatbread.

We wondered what the 200 cows ate, and were told grain ^{دڼو څو ټو} stubble and river grass. When we asked whether they were ever taken to the mountains, the mystery was solved.

Hajji Mahmud Jan villagers take their cows to the mountains every spring. They are former nomads – recently sedentarized pastoralists who maintain a partial transhumance, which supplements their agricultural production. The villagers are self-proclaimed members of the Achekzai tribe – in fact probably Kuchis, or Afghan gypsies. They own some 600 sheep and goats among the 40 households, as well as stalls at the Lashkar Gah market, from which some of them run businesses and others collect rental income. The condition of this endangered village demonstrates how well-adapted a nomadic, pastoral lifestyle can be in marginally arable zones. Nomads with substantial herds use the milk and meat to supplement their diet, or can liquidate their valuable capital on the hoof and invest it in other sources of income – in the case of these “Achekzais” in urban real estate.

Not the same

The 40 Hajji Mahmud Jan Village families all maintain equal holdings of some 3 *jeribs* per family, because they hold land through a kind of tribal tenure, redistributing the land in a rotating fashion among their kin according to need. This, at least, is what they said. The summer before last (2001) they planted maize and cotton. Both yields were good and the Bust gin, under Taliban control, paid them, whereas other farmers were not paid. This past summer, (2002) they grew maize and cotton. The maize gave a good yield, they reported, but the cotton crop was ruined by weevils, even though they used a Pakistani brand of Malathion insecticide. They think the Pakistani insecticide was dilute or adulterated. Last winter, they grew wheat and opium. The opium was plowed under on government orders and they claim they never received their promised \$350/*jerib* compensation. (Note the hastily-executed opium eradication program was flawed and subject to significant corruption and fraud. This fact, however, has opened the door to complaints by farmers across the opium belt, and their statements are not to be taken on face value without cross-checking.) The wheat yield was excellent, at 900k/*jerib*. They used 100k of mixed urea and black (potassium phosphate) fertilizer per *jerib* to get these remarkable results. Last summer they grew an excellent cotton crop and they did get paid for their cotton by the Bust gin, before the Taliban collapse.

Most of the agriculturalists on the Shamalan Canal are from families who were pastoralists in earlier times, but are now completely sedentarized. But in the case of Hajji Mahmud Jan Village, the residents still practice a form of mixed agriculture with pastoral transhumance for their livestock – which makes them livestock producers as well as farmers, and which provides them with cash-flow and a livelihood beyond what their meager 3-*jerib* land holdings might provide. *Earlier, poppy helped.*

Case 3: Hajji Wazir Village, Zone 4. Hajji Wazir village is more representative of the typical household and village economy in the Shamalan Valley – except that it is in imminent danger. Hajji Wazir is an active and talkative older man with two young boys – his only sons. He recently returned from exile in Pakistan to his 80 *jeribs* (16 hectares)

of land, which now support 12 *bazghar* tenants. He reports that the Helmand has washed away a total of 400 *jeribs* (80 hectares) – 300 *jeribs*, according to the UNOPS report – with 45 households losing all of their land. Hajji Wazir also noted that 25 other households in the village lack a male breadwinner and are destitute. River erosion has destroyed many houses, and villagers have had to rebuild as close as possible to the canal's edge, along the government road. We were shown several houses that are severely undermined and in danger of collapse, but still occupied. The village's orchards and fruit trees were also completely destroyed by river erosion. According to their own depiction, these villagers' situation is desperate.

Last winter they grew wheat and opium poppy. The wheat crop gave a good yield, but the opium poppy crop was plowed under by government order and was a total loss. The villagers claim to have received none of the promised \$350 per *jerib* compensation. This past summer they planted cotton, maize, Crenshaw melon and watermelon. The cotton crop was diseased and a total loss, in spite of the villagers' use of insecticide. Study Co-director Faiz ur-Rahman suggested that the insecticide might not have been applied correctly using the proper spraying equipment. The villager's maize and melon crops were ruined by corn borers and plant disease and were an almost total loss. Only the watermelon crop was marketable and provided some income for the beleaguered farmers. The farmers were thirsty for information on plant diseases, proper insecticides and other protective measures, etc. They peppered Faiz ur-Rahman with questions, leading us to the conclusion that an agricultural extension service, or a radio program featuring agricultural advice, would be highly beneficial to farmers in the Helmand Valley.

Hajji Wazir villagers are destitute and desperate. They accompanied us *en mass* on a tour of their flooded and ruined houses and agricultural lands. They also showed us the location of the old washed out dyke and feeder canal and, walking us out to the Helmand River, showed us where the new dike and diversion river channel would have to be excavated. They were quite knowledgeable about the physical parameters of the required restoration excavation and gabion dyke placement. According to other villagers on the lower canal, Shamalan valley residents taxed themselves on a per-*jerib* basis to pay for protective dykes and shunts at this critical juncture on the canal. But, we were told, the Taliban took the money.

5. Zone 5: The Second Zone of Imminent Erosion.

Here again, at Hajji Hashem Village, the Helmand River has meandered to within 250 meters of the Main Shamalan Canal. The major encroachment took place some ten years ago and caused a loss of 500 *jeribs* (100 hectares) of land. Since then, continued flooding has resulted in the loss of 340 more *jeribs*. At least 8 families have lost their houses and all of their possessions. Here again the drainage canal acts as a protective dike to prevent destruction of the main canal by the Helmand.

This is the main drainage canal in the Shamalan system and needs to be reconstructed for proper drainage and desalination of irrigated lands. Cereal grains in particular and other

plants with fibrous roots need to grow in well-drained soil and are choked by waterlogged soil.

Case 4: Hajji Ulam Wali Village, Zone 5. Hajji Ulam Wali Village is located just past Station 55+878, and is next to a site where the meandering Helmand River has approached to within 250 meters of the main Shamalan canal. According to villagers, 500 *jeribs* (100 hectares) were lost around 1998, and another 250 have been washed out since then. Some 170 families, located in several contiguous villages, have lost all of their land and been forced to emigrate. Farmers here have been plagued with problems over the years, first by the breach in the upper Shamalan some 12 years ago, which completely cut off the flow of water; then after the restoration of the canal through the construction of the Lashkar Gah shunt, they were hit by the Helmand erosion and destruction of their farms. They are attempting to cultivate their eroded land using water distributed through a partly-reconstructed feeder canal, but this restored land lies in the Helmand flood plain and is vulnerable to flooding at any time during the winter high-water season.

The farmers of Hajji Ulam Wali Village have grown wheat and opium poppy as winter crops and cotton and cumin in summer. Last year's opium poppy crop was plowed under by government order and, they say, they were not compensated for their loss.

This area, starting at Station 42, is occupied by members of the Populzai tribe of the Pashtun ethnic group. The 15 households remaining in Hajji Ulam Wali Village – of which 8 are *bazgar* tenants – and own just 18 cows and some 40 sheep and goats amongst them.

Case 5: Muhammad Hashem Village, Zone 5. This is another village located just after Station 55+878. The original extended family of eight brothers and several cousins initially held 360 *jeribs* (72 hectares), of which fully 220 were lost to river erosion, leaving 80 *jeribs* among them. This loss led to a large-scale emigration from the village, with some of the relatives becoming *bazgar* tenants in other areas, while others hired themselves out as wage laborers in the Shamalan Valley, or in Lashkar Gah. Two of the original villagers are now auto mechanics in Lashkar Gah.

The villagers complained that their water distribution from the Shamalan canal has been miniscule – 30 minutes per 7 *jeribs* once every two weeks in summer. With this they are able to irrigate only 1 ½ of the 7 *jeribs* of land. Using a tube well, and water from the drainage canal, when available, with an 18hp motor and a 4-inch pipe, they are able to irrigate another 15 to 20 *jeribs* in the summer, depending on available water. Thus they are able to water only a total 35 to 40 of their 80 *jeribs* of land in summer, and somewhat more during the winter flood season.

The major problems for Muhammad Hashem villages are land lost to erosion and insufficient irrigation water in the threatened Shamalan. They thought that cleaning the canal and improving the Lashkar Gah intake would help significantly. However, their

first priority for any improvement project was rebuilding the Helmand dyke, including the ruined drainage canal, which functioned as part of the dyke system, so that their lost land could be restored.

The village houses are located on the right bank of the Shamalan, and so are currently protected from the Helmand River. They have orchards of pomegranate and mulberry trees and some grape arbors. The tree fruit crops are sold at the Lashkar Gah market, while grapes and some of their melons are for home consumption. They have grown wheat and opium poppy as winter crops, and cotton, maize and cumin in the summer. They were resentful over the loss of last year's (2001) opium crop, which was plowed under by government order. They said they feel justified in growing opium poppy again this year if they are not paid a compensation for last year's crop.

One of the villagers was a graduate of a local agricultural high school, which was destroyed by Russian bombing in the 1980's, and the farmers we interviewed seemed knowledgeable about modern agriculture. "Why can't we obtain high-yield hybrid seeds?" we were asked repeatedly. When we countered with questions about potential interest in experimenting with new cash crops – medicinal plants used in Europe, for example – everyone said they were interested. "After all," one man added, "we are growing cumin now as a new crop for the Indian medicinal plant market." One young man in his mid-twenties told us that he was attending adult classes at the local elementary school at the eighth grade level. He intends to go on to his high school equivalency, and with luck, to study medicine at university. We had the impression that notwithstanding their problems with land erosion and water availability, the people of Muhammad Hashem Village are progressive and optimistic about the future.

6. Zone 6 -- The Shamalan Terminus

Note: this zone is not discussed in the UNOPS Engineering Report.

Station 63+600 is the last control station on the Shamalan Canal. It is situated some 4 kilometers below another major breach in the canal system – where the Helmand River has altered its course dramatically and completely swallowed the canal and the irrigated lands that once bordered it. During our original inspection tour of the Shamalan terminus, we were not aware of the breach. As we were tracing the canal margin, our all-terrain vehicle suddenly became mired in fine river silt and dust, mixed with the drifting sand of the Rigistan Desert, which borders on the canal zone. Exiting that morass at a sharp diagonal, we discovered just a kilometer away at right angle to the river, fields irrigated by the important Surkhoduz feeder canal. Its intake is at Station 63+600, but it ends some 3km short of the Shamalan Village. Three years ago, Mercy Corps International dug a shunt canal connecting Shamalan Village with the main Shamalan canal at a point just before the breach, to provide some water to this impoverished hamlet.

We visited Shamalan Village on Thursday, September 19, 2002, upon hearing that the terminal zone was getting its first water distribution of the current season. This was being accomplished through the kind of dramatic increase in the canal's water level described above. All of the distribution intakes along the functioning length of the canal (the upper canal) were closed, so that the rush of water would be sufficient to wash through the silted and narrowed portion and reach the terminus. Notwithstanding these dramatic measures, what finally reached Shamalan Village was little more than a trickle. Villagers further pointed out that the Mercy Corps shunt canal had been improperly surveyed. It slants visibly in the wrong direction, so that water is expected to flow up hill. Not surprisingly, water in this shunt flows slowly, sometimes even backing up, and does not reach higher-lying land formerly well-irrigated under the initial canal design. Villagers also suggested that this at best sluggish flow of water in the Mercy Corps shunt canal leads to excessive silting.

Old Shamalan Village is a disaster zone. The bulk of the land-owning population has immigrated, and most village dwellings are in complete ruins. Behind crumbling mud walls, the tangled tinder of abandoned grape arbors are visible, along with two great *kishmish khamas*, or buildings for the drying of raisins, which were abandoned after the irrigation system stopped supplying this very fertile zone with water. All of the once rich pomegranate orchards are gone, as are the fig peach and apple trees that once ornamented the gardens and provided nutritious fruit for local consumption and market sale. The place seemed inhabited mainly by forlorn old men and a few children.

Case 6: Hajji Yar's Plantation, Zone 6. Here we found a situation of sharp economic disparity and contrast. Our first stop was at the compound of Hajji Yar, an entrepreneur who, along with his two brothers, recently purchased 370 *jeribs* (74 hectares), at around \$700 per *jerib*. This is a very good price, given that land close to Lashkar Gah – when available – costs upwards of \$3,500 per *jerib*. Real estate prices are low in Shamalan village, because irrigation water is practically unavailable.

Hajji Yar and his two brothers bought their land as a speculative investment. Currently, they water some 80 *jeribs* (16 hectares) of land, using two 22 hp motor pumps. The pumps draw water from the nearby Helmand River and feed two 250 meter lengths of 6 inch metal pipe lead onto Hajji Yar and his brothers' property. Each pump cost around \$1,000 dollars, and the pipe costs \$1,500 for each 250 meter segment. The brothers' business plan is to invest sufficient money in high-quality fertilizer and insecticides to be able to produce high-profit cash crops. Last winter, they grew wheat and got an excellent yield of 700 kilos per *jerib* by this means. They also planted cumin to sell as a medicinal plant in India. It sold last year for Afg700,000 (roughly \$1.50 per kilo), but has now fallen dramatically. The brothers currently have five tons of cumin in storage, awaiting a rise in price.

Hajji Yar has also constructed 4 *jeribs* of grape arbors – he has planted vines along waist-high mud-brick walls, as is the local custom, and he is restoring one of two majestic but long-abandoned raisin-drying buildings, with an eye to resuming raisin production, long

abandoned in the Shamalan village area. He has also planted a romantic orchard of black cherry, apricot, pomegranate, apricot and fig trees, which are now in early growth. The Hajji has some six *jeribs* planted in alfalfa for fodder, and mint that he intends to dry and market locally as an herbal remedy for flatulence.

Hajji Yar is banking on an eventual restoration of irrigation water to Shamalan village, which will enable him to bring more of the 370 *jerib* estate, shared with his two brothers, into profitable production of cash crops. He currently retains 8 *bazghar* tenants and employs landless men from Shamalan village as wage laborers in the cultivation and harvesting of his crops. When asked about the source of his investment capital, Hajji Yar told us that he and his brothers had been pastoral nomads, who sold their livestock and invested their profits in agricultural land. However, it is possible, given the region and the sumptuous nature of his holding, that some of his cash came from the opium trade.

He and his brothers are quite interested in the restoration of the irrigation water supply from the Shamalan Canal and he showed Faiz ur-Rahman receipts for around \$900 worth of personal disbursements to laborers, to a tractor operator and a welder/fabricator from Lashkar Gah who constructed a replacement canal gate for Station 63+600 – all in a private effort to restore the water supply from the Shamalan canal.

Case 7: Shamalan Village, Zone 6. In Shamalan Village we found a scene of destitution and desolation. Most of the houses were abandoned and in ruins, with collapsing walls and roofs. Behind tumbled-down compound walls, we saw abandoned and desiccated grape arbors. The once rich orchards of the village were also completely gone. We were met at Shamalan village by the two village chief elders, Akhtar Mohammed and Haji Amar Allah, both in their 80s and both alert and expressive. The place is a ruin. Of the 70 houses in the village, only 30 are currently occupied. Most of the population of farmers has migrated to Pakistan, Iran and other destinations in search of work. Some send remittances to their destitute families in the village.

Of the 5,000 *jeribs* (1,000 hectares) of land in the Shamalan Village area, perhaps as few as 670 are currently in cultivation, and these only in winter, when there is water in the Helmand River that can be drawn with motor pumps. From the canal, no water has reached the village since the Helmand River breached the Shamalan Canal around 1990 – except for the three-day distribution in the last week of September, 2002. This was barely adequate for preparing a few *jeribs* of land for winter cultivation. The villagers hope to get some irrigation water from the Shamalan this winter (2002), by virtue of Hajji Yar's restoration work.

Since the Mercy Corps shunt ~~is~~ suffers from an improper inclination and does not provide Shamalan Village with any water, residents want a whole new shunt canal to be excavated, connecting the village with the Shamalan Canal at Station 63+600. But Akhtar Mohammed noted cynically that he would die before there any help would come for the farmers of Shamalan Village.

Recommendations

These conclusions have been reached after considering impending damage to the economy of the whole Shamalan Canal system, taking into account questions of equity and social justice in the land tenure system. The goal in mind is to benefit the largest number of deserving people with the lowest possible outlay. Following our methodology of defining "poverty" according to actual consumption patterns and position in the social structure, rather than according to the acreage a family may or may not own, we came to some surprising and counterintuitive conclusions. We have prioritized our recommendations according to the urgency of the repair work required. Naturally, launching one project does not preclude funding others, nor need they necessarily be undertaken one after another. Some could be launched simultaneously.

1. The most urgent project for preserving the livelihood of farmers in the Shamalan Valley is to build a dike along the Helmand River's edge, between Station 28+250 (Hajji Wazir Village) and Station 31+320 (Hajji Mahmud Jan Village). At this segment of the canal, a breach caused by Helmand river erosion would bring down the whole of the functioning canal system, and cause an economic disaster in Lashkar Gah, with repercussions throughout Helmand Province. Some 16,000 families might be compelled to migrate, adding to the already dangerously high I.D.P. population in southern Afghanistan. Such a ruined and disaffected population might also be a source of political unrest in an already volatile region. Restoring the dike between kilometers 28 and 31 of the Shamalan would also restore some 800 *jeribs* (140 hectares) of land and return about 140 households to agricultural production, in an area that is known for its melon, watermelon and other bulk vegetable crops for the Lashkar Gah market.

Of those living in the crisis zone between the Helmand River and the left bank of the Shamalan canal, the people of Hajji Wazir Village were the most impoverished and affected by the loss of agricultural land to river erosion. This is because residents of this village are solely dependant on agricultural production for their livelihoods. The residents of Hajji Mahmud Jan village, by contrast, belong to a cohesive tribal entity; they have capital invested in pastoral production and in Lashkar Gah real estate. Thus they are more insulated from economic problems on the Shamalan canal. For them, Shamalan canal farming is only one of several reinvestment opportunities for income gained through the sale of livestock and the collection of rents and other payments. And yet, they are not absentee landlords, but resident farmers and so deserve to be included among those who benefit from repairs to the Shamalan.

2. At Station 55+878, the Helmand River approaches to within 250 meters of the Shamalan canal. A total of 500 *jeribs* (100 hectares) were lost some 10 years ago and 340 more *jeribs* (68 hectares) were washed away in recent flooding, for a total of 840 *jeribs* (168 hectares). Approximately 170 farming households have been displaced. The Helmand River has also destroyed main drainage system canal for the lower Shamalan, which functions simultaneously as a dike against Helmand River erosion, and the large feeder canal for the eroded agricultural land. If the Shamalan Canal is breached at this

point, the remainder of the system -- some 20,000 *jeribs* (4,000 hectares) of irrigated land -- will be left without water, and some 4,000 agricultural families will be displaced.

The fact that the river is 250 meters away and that this potential breach point is farther downstream on the Shamalan, makes it necessarily a second priority for immediate action. But **rebuild the dike and drainage canal system at station 55+878**, and the livelihood of 4,000 households downstream will be protected, and the lands of 170 farmers in the vicinity of Hajji Hashem Village will be restored to production. With the drainage canal restored, moreover, water-logging and salination on the lower Shamalan valley will be reduced.

3. Our examination of the extreme silting and narrowing of the canal after Station 38, and our observation of the difficulty in getting water flow up to the last control point, Station 63+600, led us to the conclusion that the canal critically needs **desilting and widening and restoration of the side feeder canal control gates between kilometers 38 and 63**. Because of the erratic flow and lack of operating side control gates on this last segment of the canal, useful irrigation is difficult without starving other parts of the system. Pilferage of water and other uncontrolled behavior has resulted in a breakdown of the water rights system, which could only be rectified by improving flow and control. Overflowing drainage canals should also be cleaned out as part of this program, as faulty drainage leads to water-logged, over-salinated land.

This work can be accomplished efficiently through the use of local labor and tractor operators. A local tradition of calling up voluntary labor by village "water monitors" to clean local feeder canals has survived the last quarter century of war. This system, called *hasher*, could easily be built upon in a labor-intensive cleaning program. Such a program would greatly benefit the agricultural community and enable some families to make capital improvements to their property and cash investments in adequate fertilizer and insecticides, thus increasing crop yield. If properly conducted, a canal cleaning project will result in the reinvestment of practically all of the construction expenses into the local community.

4. Perhaps, if the canal is de-silted to the level of $\frac{1}{2}$ to $1\frac{1}{2}$ meters along its length after Station 38, and the small feeder canal gates are restored to proper working order, sufficient water might become available at the Shamalan village. An end to the current drought would make this even more likely. If, however, the flow at the Shamalan village still proves inadequate after the restoration and cleaning of the lower Shamalan canal, then we would advise **constructing a new shunt connecting the Shamalan at the last control, Station 63+600 to the Shamalan village**. The higher elevation of water at Station 63+600 would assure a sufficient head of water and a proper angle of declination to irrigate even the highest agricultural zones in Shamalan village.

This project would require a new side gate and the digging of a shunt canal starting at Station 63+600. The new shunt would then follow the main government road to the Shamalan village, a distance of some ten kilometers (about five kilometers of which would follow the NGO built shunt canal, which has proved too narrow and not properly banked and which would have to be widened and improved.) Thus ten kilometers of new

feeder canal would have to be excavated. This project, like the last, could be accomplished by contracting local labor and tractor operators, and if properly conducted, would result in the re-investment of most of the construction expenses into the local farming community.

A note on construction techniques: It is always tempting for civil engineers to apply state of the art construction technologies and heavy equipment to the kinds of projects suggested in this report. However, even the building of the critically important river dykes at the Helmand River erosion points could be accomplished with local tractor-driven hydraulic shovels and tractor-towed earth moving wagons for excavation, and local labor for the assembly of the gabions that will form the river dykes. The strength that might be lost by not using heavy earthmoving equipment could be made up by overbuilding the gabion walls, which would take advantage of the least expensive building resource – local labor – and also pump needed investment capital into the local economy. Hajji Wazir, the elder and traditional leader of Hajji Wazir Village said as our team left his guest house, “Don’t give the money to the big Engineers, they will waste it all on unnecessary things. Bring someone to the village and hire local people, and pay them directly, and the work will get done properly.”

5. We recommend that any work on the Shamalan Canal be preceded by serious talks on the district and village level about the cultivation of opium poppy. Our interviews of Shamalan Valley farmers as to their intentions seem to indicate that less poppy will be planted this year than last – possibly due to the at best spotty compensation during last year’s eradication program, as well as a widespread recognition that the new Afghan government will not tolerate poppy cultivation. However, self-confessed intentions on such a sensitive topic may not be wholly accurate, and other observations suggest the opposite – that poppy will be grown in abundance this year. Anyone planning to launch a reconstruction project on the Shamalan Canal should **make work on the canal contingent on all the relevant community leaders – at the village as well as the district level – pledge that opium poppy will not be grown on newly-irrigated land.** The language of the pledge should be drawn up in consultation with local and district *shuras*, or representative councils. Religious leaders should be associated with this process, to give it solemnity and to act as witnesses to the pledge.

6. We found Shamalan Valley farmers surprisingly open to innovation, in terms of interest in new or improved seed varieties, and agricultural techniques. Study Co-Director Faiz ur-Rahman, an agronomist, often found himself besieged as he entered a village by farmers asking questions about the availability of high-yield seeds or the best techniques for pruning fruit trees, when local knowledge had been lost. In some cases, farmers have taken the risk of planting crops for alternative markets, such as the Indian market for traditional medicinal herbs. If Helmand Province is to be durably weaned away from poppy cultivation, international donors must **fund experimental crop substitution programs that go beyond the old stand-bys of wheat and cotton.** Such a crop-substitution program should include training in processing techniques and a guaranteed purchase price combined with assistance in marketing to assure later self-sufficiency.

For a variety of reasons, medicinal herbs or flowers for essential oils appear to be very promising substitutes:

- a. They enjoy a high market value internationally – like opium.
- b. They are low bulk, and thus easily transportable – like opium
- c. Afghans dote on roses and other ornamental flowers, and are already champion rose gardeners. One of the most common, if incongruous, sights in Afghanistan is that of some fearsome gunman – beard thick upon his chin and turban swathing his brow – with a delicate rose-bud or marigold held up to his nose. Afghan rose bushes suffer none of the common afflictions of their Western counterparts, such as aphids or blight, and they tend to bloom all at once in late spring. This makes them ideal for harvesting purposes. Simple distillation or extraction techniques can be taught for obtaining the essential oil from the buds.
- d. Helmand Valley farmers are already perfectly familiar with the notion of medicinal herbs. There is a vibrant local tradition of herbalists, so-called *yunani* doctors, who prescribe herbal concoctions for a variety of ailments. It would not be difficult to introduce new medicinals, such as Eccinacea or Goldenrod, to local farmers, explaining that these are herbs that *yunani* doctors in the West prescribe. A local market might even develop, as the healing powers of these herbs were demonstrated.

But is there a certain market?
Who would market the stuff, to who?

Explanatory notes on land tenure

A primary concern in this study is the issue of land tenure and the equitable distribution of resources, as a criterion for the allocation of development funds. Differently put, it is not our intention to directly benefit large absentee landlords in preference to small landholders with large dependant families. Our baseline of analysis is the Helmand Initiative Socio-Economic Survey, published in April 2000, under the auspices of the United Nations Development Program (UNDP), which finds that 63% of households in the "central study zone," which includes the Shamalan canal command area, are landowners (UNDP 2000:8). The spot surveys taken in a number of villages in our study zones were intended to expand on, interpret and test the conclusions drawn in the UNDP study. At the same time, and as noted above, we did not assume that owning less than a given number of *jeribs* or the fact of being a share-cropper automatically constitutes proof of poverty.

Most of the land in the Shamalan Canal study area was sold or allocated at the time of the canal construction in 1959, and one can say that the land tenure system began with a clean slate at that time. Many of the original parcels were in the area of 60 to 100 *jeribs* (12 to 20 hectares). The size of most individual holdings has dropped as the original owners died and their land was passed down to the next generation. Parcels are normally divided among sons who are present, with the parcels being drawn as evenly as possible, and lots being cast to determine which son is to receive which lot. In a few cases, parcels have grown in size as out-migration has left the land of several brothers in the possession of the one remaining.

? No

But it has only been two generations since the original, relatively equitable, allocation, with the third generation rising. So most of the landholdings in our survey villages are in the range of ten to twenty *jeribs* (2-4 hectares), and are sufficient for the support of a household – given the fertility of the land and the custom of double-cropping in the Shamalan command area. The fate of the rising, third generation, however, may be problematic, with future choices to be made about educating some of the children and sending them off into non-agricultural careers. This situation contrasts greatly with that of older canal systems like those on the Tigris and Euphrates in Iraq, where devolution and sales over a long time period have led to very inequitable ownership patterns and a predominance of large absentee landowners and lands cultivated by hired laborers.

Bazgar Tenure. This arrangement is ~~the~~ practically the same in irrigation systems throughout Asia and the Near East. The first category of tenant farmers, *bazgar*, get only 20% of cereal grain, cotton, bean and fruit production, but 1/3 of vegetables like melon, okra and tomato, and 25% of maize production. The different proportions reflect the amount of labor and care required for the particular crop, and vary from region to region.. The *bazgar* tenant is also entitled to all other production costs -- tractor cultivation, seed, fertilizer, insecticide and labor in excess of what he provides – as well as a house for him and his family to live in. Most importantly, the Bazgar gets fodder from his patron's fallow land, grain stubble, and alfalfa fields, to support one or more cows. All of the

landowners and *bazgars* surveyed owned at least one cow, and generally some sheep and goats. Domestic livestock are important both for survival and quality of life in the Shamalan valley and sour milk and yogurt are a mainstay of the rural diet. While the *bazgar*'s 25% share of agricultural produce might seem low at first glance, the fact that the land owner absorbs most of the risk of agricultural production must be factored in. The *bazgar* gets his 25% free and clear, and he and his family have a guaranteed supply of milk.

Kastagar Tenure. With similar parallels in other Central Asian and Near Eastern societies, the second share cropping scheme involves a 50% distribution of the agricultural production, with the tenant covering all of the production costs as well as his own living arrangements. He does not gain access to his patron's fallow land, stubble or alfalfa for his milk cows and small ruminants, unless by special arrangement and for a fee. Upon analysis, *kastagar* tenancy is really a kind of land rental, with payment in kind and on the basis of crop yield, while *bazgar* is a kind of benevolent paternalism based on long tradition, in which landowner/patron is bound by tradition and honor to provide benefits to his *bazgar* clients even if it means going into debt in the process.

We did not find any *kastagar* tenants in any of the villages that we surveyed. The explanation for this provided in every village interview was that under the current difficult economic conditions, landless people are either unable or unwilling to undertake the risk of investing capital into agricultural production. In better times, there would be some *kastagar*, perhaps among the many households of the Shamalan valley that own a shop or some rental property in Lashkar Gah and some surplus family labor.

Supplementary Conclusions

- Land ownership and bazghar share-cropping tenure in the villages of the Shamalan Valley are largely equitable in their allocation of economic benefits. Large absentee landowners are the rare exceptions in this area. This is perhaps a result of the fairly recent allocation of lands –1959 – and also of the economic deprivation brought about by twenty years of armed resistance and civil war, which has limited possibilities for capital accumulation and investment in land in the Qala Bust district.
- Farmers in the Shamalan Canal zone are highly motivated in their agricultural planning. They energetically seek access to improved, high-yield varieties of cereal grain seeds, proper fertilizer, and insect- and disease-control products, along with improved livestock breeds and new marketable products. They would benefit greatly from the implementation of an agricultural extension service, or other agricultural advice program, and/or from the construction and endowment of an agricultural training high school to replace the one destroyed during the Soviet invasion period.
- The major problem in the Shamalan agricultural zone is not social or political, but is due to a lack of irrigation water caused by the deteriorated condition of the Old Shamalan Canal and the damage caused by the meandering Helmand River. In a significant number of cases, land-owners cannot keep all of their property in production, because of limited access to water, and/or high cost of supplemental tube well irrigation. This means that as repairs are made to the canal, the surface area of cultivated land will immediately increase. The local standard of living will increase and more immigrants will be able to return.
- Some one half of the farmers interviewed admitted to being in debt. Often they borrowed money from relatives, locally or in Pakistan. One of the most common forms of debt, however, is to fertilizer salesmen, who allow impoverished farmers to take fertilizer in planting season, only paying for it after harvest. The price increase under these terms ranges from 30% to 100% -- a kind of usury. Farmers in this region would benefit tremendously from a well-regulated micro-credit scheme. / fertilizer ...
- The Shamalan canal area –and the entire Helmand valley – is a potentially viable and productive agricultural region that does not need or expect handouts from international aid organizations, or infusions of assistance from which it would be difficult to wean the population later. This region only requires the bottlenecks and impediments to full exploitation of its fertile land to be eliminated through efficient and cost-effective reconstruction projects.

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We are also grateful to Engineer Fazal Omar of UNOPS in Kandahar, for explaining the overall economic parameters guiding the distribution of irrigation water in the greater Helmand River Valley irrigation system. In particular we benefited from his observation that the main Bogra canal and the New Shamalan sub-canal are currently being used at their maximum efficient capacity, which makes the restoration of the canal at the km. 13 and 15 breaches of questionable economic viability. The continued use of the Lashkar Gah/Shamalan canal shunt is probably the most cost-effective way to supply the lower Shamalan canal command area – particularly if, as Engineer Fazal Omar recommends, the intake were improved through the construction of a hardened intake barrage.

We applaud the companion to this study, the UNOPS Engineering Survey Report by Engineers Hafizullah and Ahmad Shaw, and the informative Helmand Socio-Economic Survey, conducted by UNDP and the Helmand Planning Group. Thanks to the information provided in these studies, we were able to initiate our research project fortified by excellent background information.