Rapid Assessment of Water Sector--Afghanistan

A Report Submitted to

United States Agency for International Development (USAID)

By:

M. Saleh Keshawarz, Ph.D., P.E.

Chairman
Department of Civil and Environmental Engineering

University of Hartford
West Hartford, CT 06117
USA

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Comments should be addressesd to keshawarz@hartford.edu or Saleh Keshawarz, Chairman, Civil and Environmental Engineering Department, University of Hartford, 200 Bloomfield Ave., West Hartford, CT 06117, USA.

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Executive Summary

The findings are based on interviews with AIA Ministries, UN Agencies, NGOs, and men on the street. No scientific data gathering has been incorporated and as such findings are based on anecdotal information

1. Northern Afghanistan, in general, seems to be emerging from years of devastating drought. Precipitation, in February and as well as in March of this year have been to the satisfaction of the farmers and people who deal with farming. Reports from the north of the country are encouraging. Snowfall, though late in the winter, was very welcomed.

2. Almost 30 percent of the land in Afghanistan is rainfed and the other seventy percent is irrigated. Sources of irrigation include springs, karezes, and canals.

3. Of the total of 3.9 million ha of cropland in the country, 1.3 million ha is rainfed and the remaining 2.6 million ha is irrigated. The rainfed land is not cultivated fully this year, not because of lack of rain, but the lack of seed, oxen for plowing, and the uncertainty about the drought. Farmers are cash strapped, needing help to buy oxen and seed.

4. Drought has caused a general lowering of the water table and has consequently affected those lands which rely on karezes and springs as their source of water for irrigation.

5. In the north, where most of the country's agricultural output is produced, the source of irrigation is mostly canals which are delivering water from the snowmelt rivers. Although the level of these rivers is lower than normal, there is enough water for irrigation. The problem in these areas are the cleaning of irrigation canals, the repair of diversion dams and the intakes of the canals, that have been destroyed either deliberately or through neglect.

6. Seed and fertilizer will be the next major requirements for the Fall planting season.

7. The locust is a feared insect in Afghanistan. Farmers are in a state of worry about the preparation level for fighting locusts. FAO in the north is not fully equipped to fight the locust.

8. Some of the most productive land in Afghanistan is in the north. This is in general double-crop land, which, with a little attention could make the country self sufficient and food secure.

9. Afghanistan lacks an integrated approach to water management. There are at least five ministries in the government which deal with water issues. At times there is no effective communication between these entities.

10. AIA is using the 1976/77-1982/83 Seven-Year Plan as a basis for reconstruction and development of the irrigation sector.

11. There has not been a serious effort to establish a database for water resources.

12. There is a water law in the books. Enforcement of the law is extremely important to avoid uncontrolled usage of surface and groundwater resources.

13. There is no pricing mechanism for water.

14. Environmental issues are on the back burner at this time and need to be brought forward. The existence of gasoline, and diesel shops in the vicinity of drinking water wells in Kabul and other cities are a threat to the groundwater table. Any spill from these stations will find their way to the groundwater and will pollute the drinking water resource. Municipalities should enact and/or enforce strict regulation for the protection of aquifers in the country.

15. Use of chemical fertilizer, though minimal small at this time, should accompany education to the public about the hazards of excessive fertilizers and pesticides usage in the future and the danger these chemicals pose to the water resources of the country.

16. Institutions responsible for the water sector exist, but the human resources do not. The existence of higher paid jobs with international organizations and NGOs have put a sever strain on the capability of AIA to attract quality professional personnel. There are a few advisors at the ministerial level and senior levels, but the task is too enormous for them to handle alone. There is a strong need for an effective capacity building effort in order to make AIA capable of accomplishing its reconstruction efforts.

17. Coordination and information sharing between the donors, UN agencies, AIA, and NGOs is limited or nonexistent. At times, more than one entity is working on the same project without the other knowing about it.

18. AIA ministries are not involved in the assessment of the needs of the country. Their involvement will lead to better training of their personnel.

19. “Keep those planes flying” said an Afghan, referring to the military planes. They make people feel safe.

Summary of Recommendations

1. While keeping an eye on the drought, a two-pronged strategy for the rehabilitation of the water sector in Afghanistan should be followed. In areas where the drought seems to be easing, reconstruction of water sector facilities should be undertaken immediately. In areas where the drought effects are lingering, emergency activities as was recommended by Sue Lautze should be continued.

2. The reconstruction of the irrigation system of the country should go to the top of the priority list of projects for rehabilitation and reconstruction. The Seven Year Plan (1977/78-1982/83) can be used a base line for the reconstruction and development of irrigation projects.

3. An assessment team should immediately be assembled and sent to survey the immediate needs of irrigation infrastructures. The team should include member of the appropriate ministries of AIA. They should finish their work in the early part of the summer. To avoid duplication, this activity should be coordinated with any UN agency or other organizations, which may simultaneously be doing the same work or planning to do it in the summer.

4. Funds for Quick Impact Projects (QIPS) should be released as soon as possible. Priority should be given to projects in which the community guarantees the long-term maintenance of the facilities.

5. All irrigation projects must have a water supply component for people in the rural areas. The water supply projects must satisfy, as a minimum, criteria set forth in Sphere Standards.

6. The locust is a real threat to the crop this year. FAO in the north of Afghanistan is not fully equipped, funded, or prepared to fight this pest.

7. A water stakeholders conference sponsored by the Ministry of Irrigation and funded by UNICEF took place in Kabul in May. The conference helped streamline the activities of different entities as to the water consumption in the country.

8. A Water Resources Management Team with members from appropriate entities should be established to deal with the management of the water resources of the country and improve communication between the ministries involved.

9. A GIS for water resources in the framework of the Famine Early Warning System for Afghanistan (FEWS Net for Afghanistan) and Afghanistan Management System (AIMS) should be established.

10. The establishment of an Environmental Protection Agency, either as part of an existing ministry or a separate entity is highly recommended.

11. AIA must be helped with cash to increase the salary of its employees, if it is to build capacity. Substantial salary increases are need to attract quality professionals who may choose to work for international organizations and NGOs for better pay.

12. Scholarships and fellowships must be provided for Afghan professionals for further education and training.

13. All agencies working on emergency or development projects should be required to use counterparts from the appropriate AIA ministries. They agencies should be required to train and pay the AIA ministry employees for their time on the job. This will help capacity building in AIA.

14. A team of Afghan expatriate professionals who are living and working at professional levels in the US and other countries should be assembled and sent to Afghanistan as advisors for different ministries and for capacity building. They may be borrowed from their current employers for the duration of their work in Afghanistan. UN Volunteers program and IOM efforts are commendable, but will not be far-reaching enough. Professionals who reside in western countries have financial obligations that cannot be satisfied with the salaries provided by IOM or the UN Volunteer program.

A group of energetic Afghan expatriates is required to help AIA, the donor community, and the NGOs to accomplish the monumental task of reconstructing Afghanistan.

15. The Afghans are friendly to the US, and we should capitalize on this fact in the region. The ISAF should be expanded to cover other provinces too. This is the only chance we have. If we lose this chance, we may live to regret it. If, on the other hand we capitalize on this historic opportunity and help the Afghans, it will go a long way at securing present and future American interests that coincide with Afghan interests.

Methodology

This report was prepared based on discussions with the Afghan Interim Authority (AIA), United Nation Agencies, Non Governmental Agencies (NGOs), and ordinary citizens in Kabul.

Discussion through a series of meetings with AIA was limited to the ministries directly involved with water issues. These were the Ministries of Agriculture, Irrigation, Rural Development and Reconstruction, Public Works, and Power. Attempts to contact the Ministry of Mining, which is responsible for issues relating to groundwater, were not successful.

United Nations agencies that were consulted were UNICEF, FAO, WFP, HABITAT, UNOPS, and WHO.

Non Governmental Organizations (NGOs) included MCI, DACCAR, and MEDAIR. In addition, people on the street including taxi drivers and others were engaged in casual conversation.

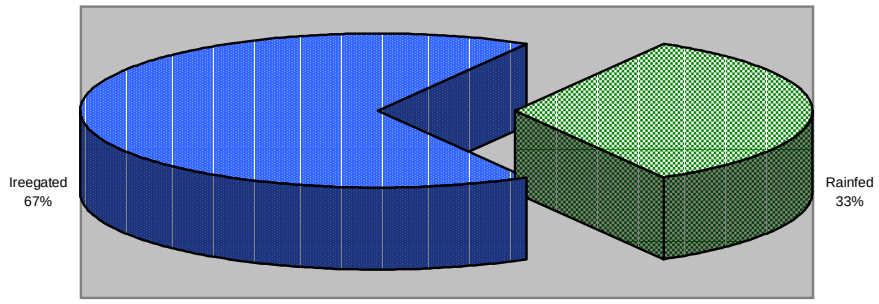
Due to the very short period of time devoted to this assessment, all findings are based on anecdotal information and not based on scientific data. A field survey of the area is of utmost necessity before a final decision is made about the extent of aid provided to the country. This field study should be completed at the latest in early June so that any decision for future activities is made before the fall planting season.

Background

Afghanistan is an agrarian country with more than 75 percent of the population living in the rural areas. The economy of the country is based on agricultural products and livestock. The majority of the rural population is comprised of subsistence farmers who live off small plots of land. Afghan farmers use centuries-old farming techniques with oxen providing the draught power.

Results of some surveys in the past have shown that the arable land comprises only 50% of the total cultivable land which is not cultivated because of the lack of sufficient water. There are roughly 3.9 million ha of cultivated land in Afghanistan, 1.3 million ha of which is cultivated *lalmi* (rainfed) and 2.6 million ha *aabi* or irrigated. The proportions of rainfed and irrigated land are shown in Figure 1.

Figure 1: Irrigated and Rainfed Land in Afghanistan
Total: 3,900,000 ha



The major portion of the arable land for permanent crops is located in the northern and western parts of the country as shown in Figure 2. The irrigated land is usually located in the river basins of the North, West, and the Southwest. Though there is irrigated land in the southern and eastern parts of the country, the proportion is small compared to the irrigate areas in the North, West, and the Southwest.

Figure 2: Arable Permanent Crop in Afghanistan
Source: www.pcpafg.org/dynamicwebmaps

Sources of Water

Water resources in Afghanistan are derived from groundwater through springs, karezes, and wells, and from rivers via canals. The proportion of each is shown in Figure 3. To have a better understanding of each system, they are discussed in the following sections. The statistics given in these sections are old Ministry of Planning statistics. They are intended for comparison purposes only.

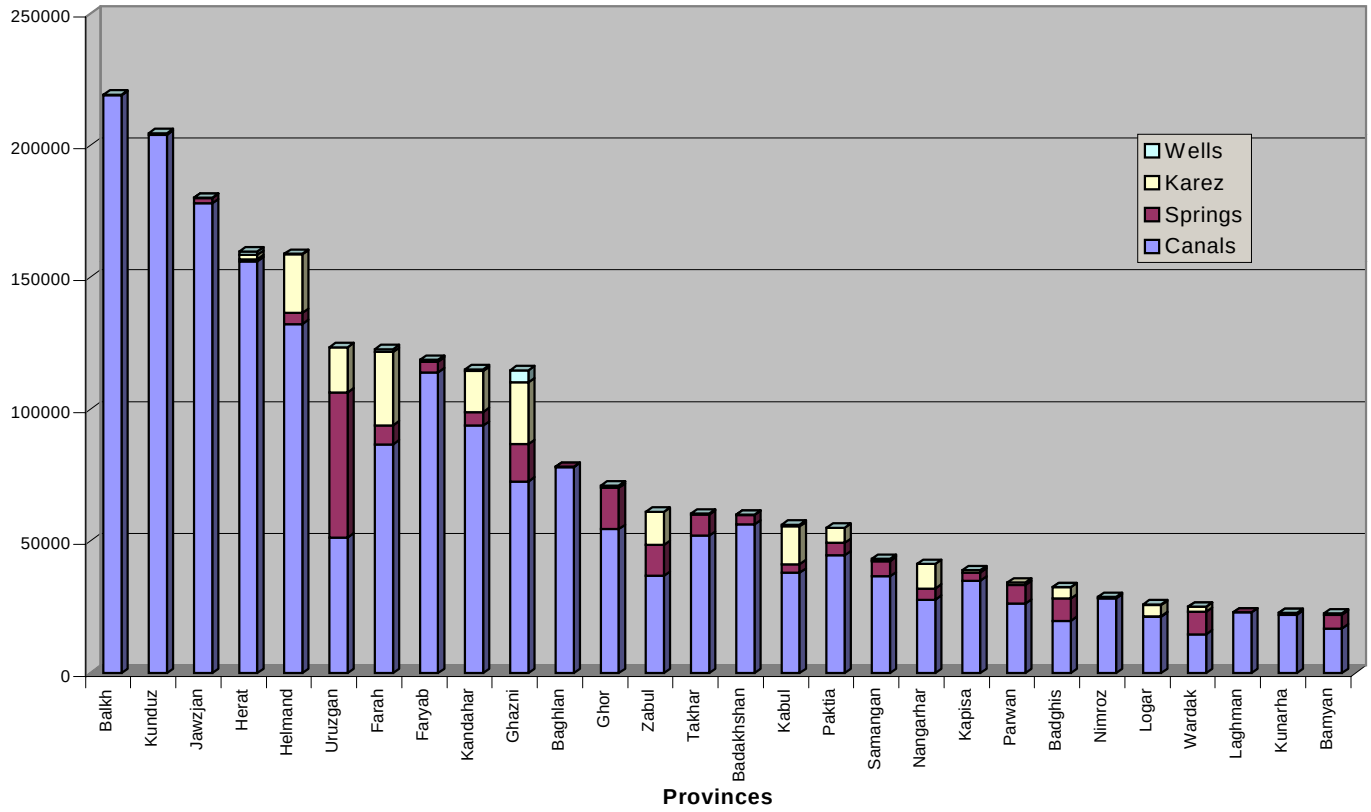
Spring:

When the groundwater table crosses the ground surface, water seeps from underground and flows on the surface and form springs. Close to 183,000 ha of land are irrigated by springs in Afghanistan, as shown in Figure 3. The largest portion of spring-irrigated land is located in the Uruzgan province in the southwest. Springs are directly dependent upon the groundwater level. When the groundwater level goes down, e.g. during drought years, the results is a reduction of outflow from springs. That is why some of the worst drought-stricken areas of the country are located in region where they depend heavily on spring water for irrigation. Spring irrigation is common in the east and in the south. It is not as common in the north of the country.

Karezes:

Karezes are underground galleries that tap groundwater in the aquifers of alluvial fans. Underground tunnels with gentle slopes carry water from the source to the settled areas.

Figure 3: Area of Irrigated Land, ha, Irrigated by Different Irrigation Schemes in Afghanistan



Techniques for retrieving this water have been used for thousands of years in Afghanistan, Iran, the Middle East and North Africa. Karez is one of the most economical methods of tapping groundwater for irrigation purposes. It is environmentally safe and the water is drawn by utilizing of gravity.

The total area of karez-irrigated land is estimated at 163,000 ha, slightly less than spring-irrigated land. Karez irrigation is common in the south and southwest of the country, but less so in the north of the country.

Canal:

Canal irrigation is by far the most common method of irrigation in Afghanistan. Nearly 75% or 1.9 million ha of land is irrigated by canals in Afghanistan. As is evident from Figure 3, the proportion of canal-irrigated land is much greater than any other form of irrigation. Most of the canal-irrigated land is located in the north, west, and southwest of the country. The source of these canal are primarily snow melt rivers in the region.

Drought Condition

Four consecutive years of drought have had a devastating effect on the water resources of the country and its agriculture and livestock. The effects of the drought on rainfed agriculture and on the pastureland have been severe. As for the irrigated land, the effects have been more severe in areas depending heavily on springs and karezes for their water sources.

There are some indications this year that the drought conditions may be easing, at least in the north of the country. There has been a good amount of rainfall during the months of February, and March (Figures A1 and A2, Appendix A) and the forecast for April is encouraging.

According to eyewitness accounts, the livestock is making a comeback, and the pasture in the north is extremely green and full of grass. However, the farmers have not planted their rainfed lands fully because of a number of reasons. First, many of them have either lost or sold their oxen, the most common draught power for plowing the land. Second, they either did not have the seeds or they were fearful that the drought would still linger on. The drought itself may be over in terms of rainfall, but the effects on the rainfed crops may not be over for this season.

Irrigated crops, on the other hand, are planted widely and every indication is that it is going to be a good harvest year in terms of irrigated crops.

The bad news is that the danger of locusts is very real this year. Depending on the temperature, soon the farmer will face this fearsome enemy of crops if precautions are not taken immediately. FAO, the agency that is responsible for locust control, is ill prepared, ill funded, and ill equipped to fight this menace.

Water Sector Assessment

At least five ministries in the government are directly involved in the water sector in Afghanistan: the Ministry of Rural Development and Reconstruction, Ministry of Irrigation, Ministry of Mining, Ministry of Agriculture, Ministry of Public Works, and Ministry of Power.

The Ministry of Rural Development deals with minor irrigation, water supply, and sanitation projects in rural areas. The Ministry is divided into two parts: the Construction Section which mainly deals with irrigation and transportation infrastructure and the Public Health Section, which deals with water supply. Small projects in village environments are the responsibility of the Ministry of Rural Development and Reconstruction.

The Ministry of Irrigation deals with major irrigation infrastructure of the country. They are in charge of planning, building, and maintaining major water storage and water conveyance facilities.

The Ministry of Mining is responsible for groundwater resources of the country. The Ministry of Public Works, through its Water Supply Authority is responsible for water supply for major cities in the

country. Detailed information regarding key contacts and highlights of interviews with the ministers and other high-ranking official are included in Appendix B.

Water Sector Strategy

Large-Scale Irrigation:

It appears that AIA, at least to start with, is relying on the water strategy that was elaborated in the Seven Year Plan (1976/77-1982/83) of President Daud (1973-1978). The development strategy as outlined in the plan was to focus on projects with shorter gestation period. Projects with potential for industrial, agricultural, and power development were selected. Small irrigation projects and irrigation networks were emphasized. The enactment of a water law was envisaged. Participation of farmers in the financing and maintaining of the projects was being encouraged. Research on groundwater, and providing facilities for maintenance of the irrigation systems were envisaged.

Some of the projects outlined in the Seven Year Plan are listed in Table 1. A number of these projects were new and the rest were carry over from previous plans. The cost estimate column for 1973, in Table 1 is based on an exchange rate of afs 50 to a US dollar (est.1973 exchange rate). A multiplier of 4 (based on the weighted consumer price index since 1973) is used to estimate the cost in 2002.

The Seven-Year Plan was over ambitious in terms of its financial backing, it is even more ambitious now in terms of the human resources needed to implement the planned projects. But, that said, given the current state of information, or lack thereof, the Seven Year Plan is a good starting point for water sector rehabilitation and development in the medium and long term..

In the irrigation sector, AIA, prioritizes projects in three categories (Engr. Sultan Mahmood),

1. QIP (Quick Impact Projects) something which the FAO and the World Bank are also advocating. The number of these projects is 30 and could revitalize about 1.8 million ha. Six zones are surveyed. . A detailed list of these projects is available with the Ministry of Irrigation.

2. Projects initiated during President Daud's time, but remained incomplete. These include the Salma Dam in Herat, Kamal Khan Dam in Nimrouz, and Kukcha Canals and hydroelectric projects in the northeast. One million ha of new land will be irrigated with the completion of these projects

3. Projects where feasibility has been completed, such as the Bakhshabad Dam on the Farah Road (river), Cheshma Shafa in Mazar, Khosh Tepa, Kelagai, and Kama.

Projects under category 1, could be classified as emergency short-term projects, category 2 as medium term, and category 3 as long-term projects. Though these are projects that could result in substantial increase in grain and industrial crop production, it is extremely important to do a field assessment of these projects before funds are committed to any of them.

Many projects listed in Table 1 are very expensive and the rate of return may not justify the expenditure. This has been historically true with the projects in the Helmand Valley and in the Nangarhar Valley.

Small-Scale Irrigation Projects

The majority of farmers in Afghanistan are subsistence farmers who hold small plots of land. They live in approximately 20,000 villages scattered across Afghanistan. Villages are located where there is water. As was mentioned earlier, the sources of these waters are springs, karezes, or canals. In some areas, rainwater is harvested and stored in pools to be used as drinking water.

The Ministry of Rural Development and Reconstruction, in AIA, in a very enthusiastic way is trying to exert its authority on the issue of small irrigation systems, and it should be aided to carry out its mission. They have prepared a jealously guarded list of candidate projects for reconstruction and rehabilitation.

Table 1:Candidate Project for Construction or Improvement in the Seven Year Plan

Project Name	Type	Area	Region	Est. Cost 1973. $M	Est. Cost 2002, $M
Khosh Tepa	Div. Dam, Canal and Pump	Balkh & Aqcha River	North	156	624
Kokcha	Div. dam, Canal, Hydrolec	Kokcha River	Northeast	74	296
Farah-Rud	Bakhsh. Dam, Canal, Hydroelec	Farah	West	141	564
Hari-Rud	Salma Dam, Canal Hydroelec.	Herat	West	50	200
Kailagai	Dam, Hydroelec.	Baghlan	North	46	184
Chashma-Shafa	Dam, Hydroelec.	Balkh	North	34	136
Panjsher	Dam, Hydroelec	Parwan	North	4	16
Sardeh	Dam Complete, Canal	Ghazni	Central	9	36
Parwan	Canal, Dam	Parwan	North	24	96
Kunduz-Khanabad	Dam, Canal	Kunduz	North	18	68
Ghorband	Dam, Canal				
Sange Mehr	Dam, Canal	Badakhshan	Northeast	1	4
Kama	Dam, Hydroelec., Canal	Nangarhar	East	19	76
Nahre Karim	Canal	Laghman	East	1.75	7
Amu and Panj	Emb., Diversion	North	North	6	24
Shamalan	Irri. & Drain.	Helmand	South West	0.75	3
Darweshan	Irri. & Drain.	Helmand	Southwest	12	48
Marja	Irri. Drain	Helmand	Southwest	5	20
Nade Ali	Drainage	Helmand	Southwest	4.75	19
Babaji	Drainage	Helmand	South West	0.25	1
Saraj Canal	Canal	Helmand	Southwest	0.08	0.32
Saraj Dam	Dam, Canal	Helmand	Southwest	14.25	57
Kajaki Spillway Gates	Gates, Raising Dam	Helmand	South West	16.75	67
Western Kajaki	Drainage, Irri	Helmand	Southwest	6.25	25
Lower Darwesh.	Canal	Helmand	South West	10.5	42
Alambagh	Dam, Flood	Helmand	Southwest	106	424
Kamal Khan	Dam, Flood	Nimruz	Southwest	98	392
Khwabgah	Dam	Nimruz	South West	5.75	23
Seekkh-Sar	Dam	Nimruz	Southwest	5.25	21
Nahre-e-Lashkargah	Canal	Nimruz	Southwest	29.5	118

Source: Seven Year Economic Plan of Afghanistan 1976/77-1982/83

The task of reconstructing small-scale irrigation projects in the country is overwhelming. Fortunately, over the past ten years or so, some international and national NGOs have gained enough experience to embark upon reconstruction and rehabilitation of small-scale irrigation projects. Eeither through cash for work, food for work, or through what is known as ***hashr*** (voluntary work for the good of the community such as cleaning canals or building a diversion dam) the community has built some impressive projects. One such project is shown in Figure 5 This project consists of a diversion dam to replace an old dam (Figure 4) , and the intake for a canal (Figure 6) The intake gates are closed for cleaning the canal. The project was built by MEDAIR, a Swiss NGO through Food for Work Program provided by WFP.

A similar diversion dam on the same river was built through funds provided by USAID.

There has not been a specific and coordinated strategy for small-scale irrigation projects. The overwhelming number of these projects are located along the border with Pakistan (Figure 7) because of easy access to the project sites, relative security during the Taliban era, and the lack of a national strategy to coordinate the NGOs and other International Organizations. There was no functioning government entity to regulate these projects.

Figure 4: Old Dam on the Logar River

Water Supply

Waterborne diseases are one of the leading cause of death among children in Afghanistan. The majority of the population does not have access to clean water. Very few major cities have piped water supply systems. Some international NGOs and UN agencies have worked trying to provide safe drinking water to the population, but it is not nearly enough.

Figure 5: New Dam on the Logar River

HABITAT and DACCAR have sunk a large number of wells throughout the eastern, southern and western parts of Afghanistan. As in the case of other projects, there has not been any coordinating body to decide where to install a well.

DACCAR has sunk around 20,000 wells throughout Afghanistan. Due to the recent drought, many of these wells have dried up and in some areas the deeper wells have had adverse effect on the shallower wells, springs, and karezes.

The Ministry of Public Work, through its Water Authority is in charge of the water supply to urban areas. The Ministry of Rural Development is in charge of the water supply for the rural areas

Figure 6: Canal Intake

Urban Water Supply

The strategy of rehabilitating the water supply system is based on educating the public on the benefits of water conservation, health, and rehabilitation of the water supply infrastructure. The focus at this time is Kabul and other major cities in the country.

There are thirteen provinces with water supply system. Seven of them are 50 to 70 percent active and six systems are inactive. Eighteen provinces do not have any system at all.

The Water Authority is trying to repair and reconstruct the water supply system in Kabul. The drought apparently has not had a major negative impact on the aquifers supplying water to Kabul City The Kabul Water Supply source consists of the Allauddin deep wells, Afshar deep well, and the Logar River Basin wells, by far the most reliable of the sources. Unfortunately, the wells are there, but because of a lack of electricity, the pumps are not working. The water table during the drought time has been at a depth of 1.7 m from the surface and the 1.1 m during normal years. The depth of the aquifer is 48 to 62 m with a length of 32 km. The recharge area is close to the mountains in Wardak Province.

ICRC is helping to rehabilitate the Logar Basin projects (7 projects), CFW (German Development Bank) is giving a 7.6 mill EU grant to rehabilitate several water supply projects in different provinces, and Care International is helping with four projects.

Rural Water Supply

An overwhelming majority of rural residents do not have access to a safe drinking water supply. Although in the past 10 to 15 years, the UN agencies and other some NGOs have installed drinking water wells, but these are not nearly enough for the population.

The rest of the rural population rely on springs and karezes if they are lucky, otherwise they have to rely on the water from canals that are used for irrigation, human consumption, and animal consumption. More often, than not, these canals are polluted before they reach the village. In some areas, citizens rely on rainwater harvesting for their drinking purposes. These rural areas were especially hard hit during the drought years. There doesn't seem to be a specific strategy in place as how to provide safe water to the rural areas of the country.

Development Gaps

Information and human resources play a significant and even crucial roles in any rehabilitation and development work. During the past twenty-four years there has been a virtual halt in gathering and compiling reliable statistics, and in training, and building capacity. This has led to gaps in policy on the part of the government, gaps in information gathering, and gaps in human resources or capacity building.

Source: UNDP/FAO

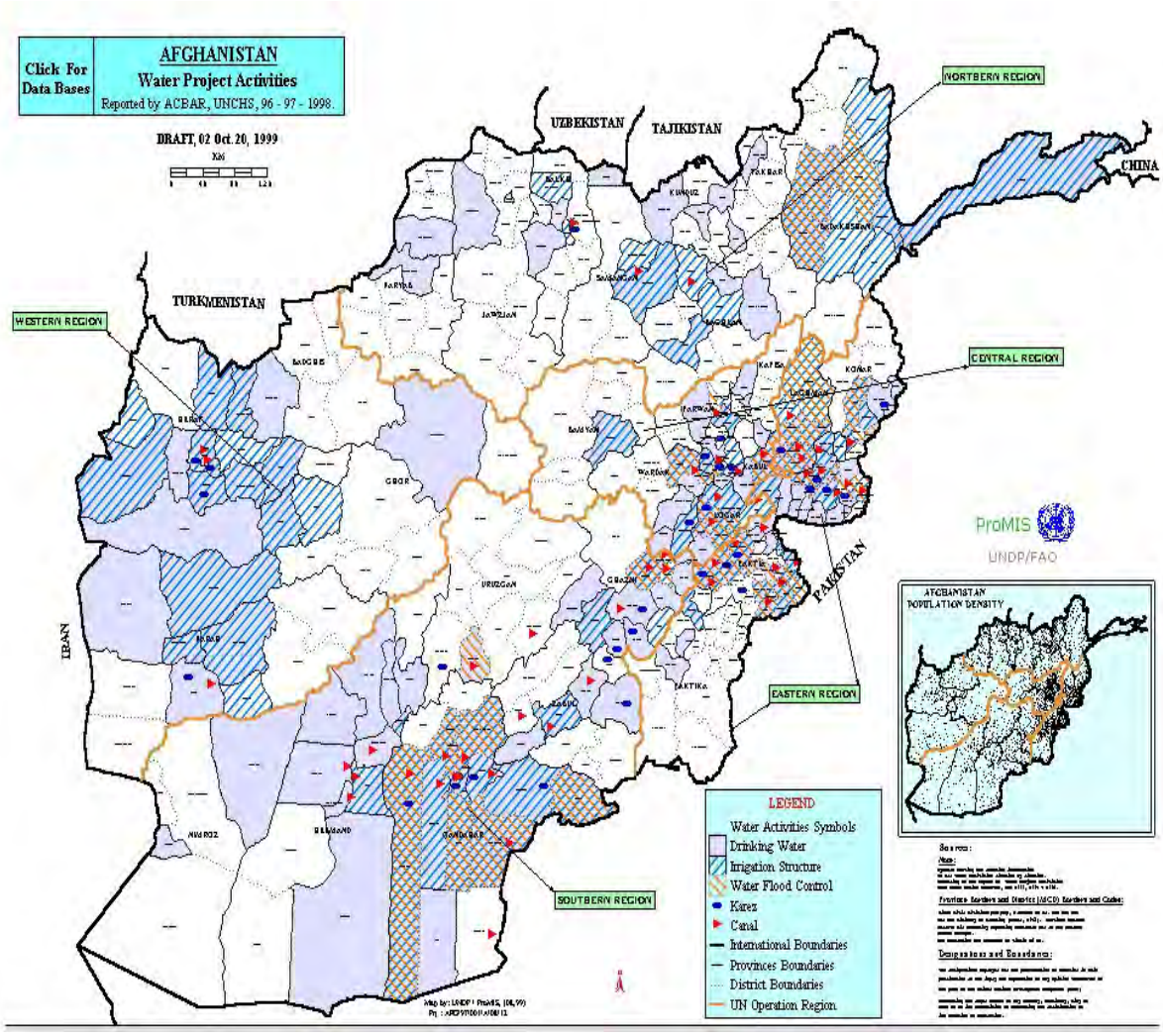


Figure 7: Location of Water Projects in Afghanistan

Policy Gap: The lack of a professional cadre in the government has led to a severe policy gap in various aspects of rehabilitation. Afghanistan has been frozen in time in 1978 as far as any governmental policy in the water sector is concerned. Most Government agencies rely on the policies developed during the 1970s.despite a time gap of twenty-four years. Government agencies still use the old plans developed in the 70s. The goal apparently is to bring the country to the level of 1978 and then develop it beyond.

Information Gap: The protracted war caused a decentralization of activities away from the government and to the International agencies and the NGOs. The government became a bystander in the reconstruction and development. The Central Statistics Authority that existed before the war was gathering statistics, but has practically stopped gathering information. New projects that have been implemented in the past twenty years or so either relied on old statistics or assumptions.

Human Resources Gap: The flight of professionals and the educated elite, combined with the collapse of educational system in Afghanistan has had a devastating effect on the capacity of the Government of Afghanistan. It will take a while to bring the capacity level to prewar levels. There is a severe shortage of professionals in the country. Whatever meager capacity existed has been absorbed by the International agencies and the NGOs who pay them as much as ten times the salary that the government pays.

AIA is considering the creation of expert cells in each ministry to take on the task of rebuilding and development. This will prevent the creation of a bloated bureaucracy. However, ministries which deal with extension services and the enforcement of regulations cannot function without a large pool of personnel. The idea of expert cells is an excellent one if it is used selectively.

Proposed Plan of Action for Water Sector

Water Sector Strategy

The Water Sector Strategy should focus on water security in the short term, and development of water sector infrastructure in the long term. In the past twenty years, the people of Afghanistan not only suffered from wars, but also from natural disasters such as earthquakes and drought. They were living in a state of emergency for all those years and what meager aid they were getting from the donor community was earmarked for emergency relief and could not be spent on development. Because of the horrible regimes that they had, the majority of the educated and professionals left the country and as a result, Afghanistan is in a state of shambles.

Afghanistan needs a two-pronged strategy in the water sector. Both of these could be followed in parallel. One strategy is needed to cope with the effects of drought in those areas where it still persists, while the other is required to deal with irrigation infrastructure rehabilitation in those areas where the drought seems to be easing. Several steps need to be taken immediately:

1. **Field Assessment**: An assessment team should be put together with representatives from the Ministries of Irrigation, Rural Development, Mining (for groundwater), and Agriculture to assess candidate projects for immediate action They should report back to USAID no later than July 30. The team, in addition to the professionals required to assess water projects, should have a strong GIS and GPS capability to prepare a database and maps for the candidate projects. Projects that come under Category 1 of the Ministry of Irrigation (QIP) need not wait until the end of the assessment period. Funds should be made available to start these projects after a quick field assessment. The assessment should include potential beneficiaries, impact on the overall economy of the region, the project's contribution to the overall food security, potential to create employment, and its ability to contribute to capacity building.

   It should also be kept in mind that QIPs must have a water supply and sanitation component that could satisfy the minimum water supply and sanitation requirements, i.e. the "Sphere Water and Sanitation Standards" (http://www.sphereproject.org/handbook/watsan.htm)

   The field assessment team, in conjunction with QIP projects should conduct a preliminary assessment of the larger scale projects listed in Table 1.

There is rampant duplication of efforts in Afghanistan at this time. Coordination with the ministries named above and the coordinating body headed by Mr. Joma Mohamad Mohamdi is crucial to avoid duplication of efforts and wasting of funds.

2. Implementation of Quick Impact Projects (QIPS)

The donor community should release funds for QIPs immediately after field assessment is complete. AIA in cooperation with NGOs should start these projects quickly. These projects should be based on cash for work . It is important to give priority to those projects where the community agrees to participate in future maintenance of the irrigation and/or water supply facilities otherwise sustainability cannot be guaranteed. A high degree of cooperation and communication is required if these and other projects are to be successful.

As part of the USAID's WASH Projects which was organized to respond to International Drinking Water Supply and Sanitation Decade, Principle 4 covers the importance of cooperation between the different entities involved in a project. As part of the lessons learned it states "*The national government role is to assume primary responsibility for sector management, including planning, donor coordination, policy reform, regulation, and institutional and financial aspects of development; the donor role is to provide coordinated support in the context of national plan; the nongovernmental organization (NGO) is most effective if it is played out in the context of national development plans; the community role is to own and manage the facilities constructed and to be actively involved in the decision making in all phases of project development.…..*"

The striking feature in this principle is the fact that the NGO activity should follow the national development plan. The role of NGOs is crucial more than ever because of the shortage of human resources in the government. Not only should they implement projects, but the should take an active role in capacity building for the government and in helping the government achieve its goals. Each NGO can and should take some government employees who are directly involved in the project under its wings and try to train them and pay them a supplemental salary.

3. Creation of a Geographical Information System (GIS) for Water Resources Management:

As part of a future Famine Early Warning System (FEWS) Network in Afghanistan, and in the framework of the Afghanistan Information Management Service (AIMS) and to close the information gap in the water sector, the establishment of GIS for water resources is a must. The initial database will be designed by the GIS professional who will be part of the Fields Assessment team and in turn he will provide training to the Afghan counterparts from different ministries as to the inputting and managing of the water resources data.

Since GIS is such a powerful tool for storage, retrieving, and mapping of data, its use will increase in many aspects of reconstruction and development. To support such a large customer base, capacity could be built by incorporating GIS in the Civil Engineering Curriculum at Kabul and Herat Universities. The University of Hartford has incorporated such a course in its civil engineering curriculum and will be able to help implement it in Afghanistan. The basic requirement of the course is establishing a computer laboratory in those two institutions first.

There are thousands of wells dug all around the country by UN agencies and other organizations. Boring data for many of these wells are available. DACCAR, for example, has boring logs for about 20,000 wells. With help from the Faculty of Engineering students as interns, the Ministry of Mining can use these to facilitate mapping of groundwater elevation in many parts of Afghanistan.

4. Creation of an Integrated Water Resources Management Team:

There are many stakeholders in the water sector in Afghanistan. The best way to mange the water resources in the country is to approach the task from an integrated point of view. To integrate is to bring together the different stakeholders so that they can all have a say in the management of this scarce resource. This team could prepare the country and the people to deal with water problems during normal times, floods, and drought.

The team will consist of high-ranking technical people from the different ministries dealing with the water sector. The team will have input from a variety of constituencies in the water sector.

The team will consider issues pertaining to water resources such water supplies for irrigation, human and animal consumption in terms of quality and quantity; environmental issues such as aquifer and watershed protection, co-ordination between different water users, conjunctive use of water, and water harvesting.

To build the capacity for such a team, the potential members should be brought to the United States for short-term training and to visit different water authorities to learn how they manage water. Creation of the water resources database discussed above will help the team make informed decisions on water issues.

5. Medium and Long-Term Projects

The only plan that is available and has some scientific basis at this time is the Seven-Year Plan of the 1970s. The ministry of irrigation has rightly adopted that as the basis of their future activities. These projects of the Seven-Year Plan are listed in Table 1. It necessary that a thorough field assessment of these projects be done before any funds are committed. The rate of return should justify each project, thereby ensuring that the scarce economic resources be spent on viable projects. These projects can be adopted for medium-term and long-term development and reconstruction.

6. Capacity Building

It is no secret that AIA is suffering from the lack of professional in all fields. It has in place a co-ordinating body (AACA) which is stretched too thin and is trying to do everything, but for obvious reasons, it is beyond the capability of a small group of professionals to coordinate the monumental task of reconstruction. The lead role of Dr. Asharaf Ghani and the welcomed joining of Joma Mohamad Mohamadi, a civil engineer and former Minister of Water and Power who has had many years of experience in the irrigation field will help lead the activities of AACA in the right direction.

On the ministerial level, the shortage of technical staff is severe. There are many reasons for this shortage. Aside from the brain drain that was caused by former brutal regimes, the salary level in the government is extremely low. The average salary of an engineer working for the government is $20 per month, compared to $150 to $200 per month paid by NGOs and UN agencies. It is natural for the available pool of engineers to join the higher paying employer. To remedy the situation a number of steps should be taken.

The government should introduce some incentives for all employees in general and technical employees in particular. These incentives should add up to or near the level that NGOs and others pay.

As a first step, the government may charge the NGOs and others for the time that its employees spend on projects. Part of this charge should go to compensate the employee for work in the field as a per diem or salary supplements, much as American police officers are paid by the construction companies for their work on road construction sites. This step may impose an additional financial burden on the NGOs. However, since the ultimate goal is to help AIA in its mission, the donor community should be willing to provide funds for the additional cost.

All NGOs who have projects should be required to take some employees with them and train them in different fields. On the one hand this will create a source of funds for the ministries if they charge the NGOs for their time, and on the other hand it helps the ministries to have a trained cadre of technical people in the future.

The government employees should be given scholarships and fellowships to visit countries abroad for short-term or medium-term training. This will certainly attract more people to government jobs. Salary differentials or food coupons are a must if AIA is to attract qualified people.

The efforts of IOM in this respect, though commendable, are not going to be very successful in attracting qualified expatriate Afghans to Afghanistan. An Afghan who lives in a western country has financial obligations that cannot be fulfilled with the salary level that IOM offers. There has to be a concerted effort on the part of the donor community to subsidize the salaries of those expatriate Afghans who will go to work in Afghanistan for the short or long term.

The Faculty of Engineering in Kabul and Herat must be strengthened to train engineers for the medium and long term. Professors in these institutions can design short courses for training the technical staff in the ministries.

In addition to the steps above, there are many qualified Afghans who are working in the United States in different technical capacities. They have the technical and language capabilities to serve in Afghanistan at this crucial time. They do not carry the negative political baggage to make them pro or anti a specific group. They have the incentive and willingness to go and serve Afghanistan. However, like every body else in the United States, they have financial obligations that they have to fulfil. They have the energy to work on reconstruction and developmental projects in Afghanistan. All it takes to get them there is for USAID to borrow them from their respective organizations and either USAID or the World Bank pay their salaries. This will help establish a cadre of highly professional people who could advise AIA in its reconstruction and developmental projects. Each one of them will be a valuable resource in capacity building for AIA.

7. Creation of an Environmental Protection Entity

Unregulated development will lead to environmental disaster. Surface water and groundwater resources must be protected from non-point source as well as point source of contamination. Not only water, but also air, needs protection. Air pollution is becoming a serious problem in Kabul. There has been an incredible increase in the number of passenger vehicles in Kabul. The exhaust from these cars has had a negative impact on the quality of air.

One may argue that we are dealing with an emergency situation here and we do not have the luxury of dealing with environmental issues. The point is well taken. However, soon emergency will change to development. It will be much easier to make the transition, if environmental protection is considered at every stage of project implementation.

The existence of petroleum product stores next to drinking water wells in Kabul and other areas is a serious threat to the groundwater table. It takes a sudden spill to contaminate groundwater, but it will take many years to clean it. In Afghanistan, once the aquifer is contaminated, the possibility of cleaning it is nil.

Creation of an Environmental Entity in the framework of AIA with the mandate of drafting and eventually enforcing environment regulations is something that AIA should look into seriously.

Closing Remarks

Contrary to the constant negative media coverage from Afghanistan recently, the vast majority of Afghans are happy about the change in the government and are optimistic about the future. One can feel it in the air. Everywhere you look, you see signs of life and activity. Farmers are planting, masons and carpenters are building and repairing, painters are painting. Children are flying kites and going to school. Let us keep the momentum going and push toward creating opportunity in the rural areas where the majority of Afghans live.

It is a historic opportunity for USAID to make a tangible difference in the life of a people who are friends of the US and will remain friendly toward the United States. And as one Afghan put it “keep those planes in the air,” while alluding to the US military.

Appendix A

Precipitation Maps for February and March

Source: grads.iges.org/afgh/

Figure : A1

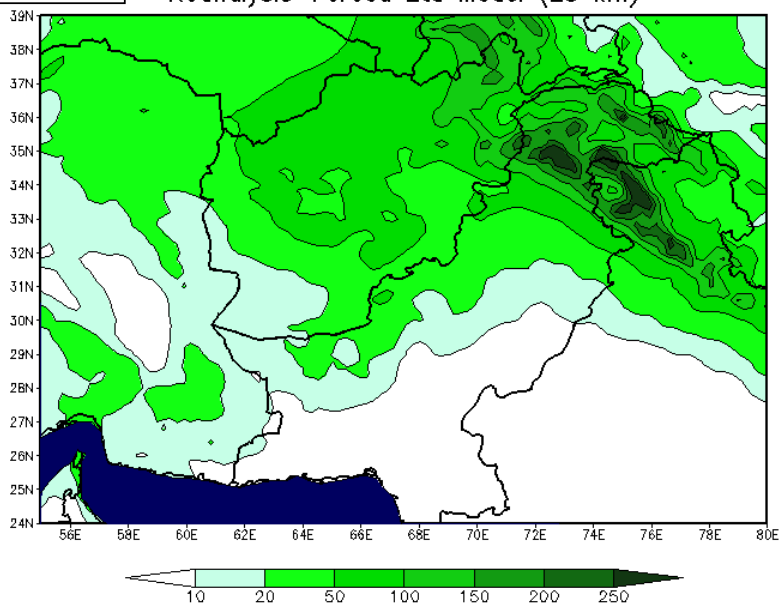
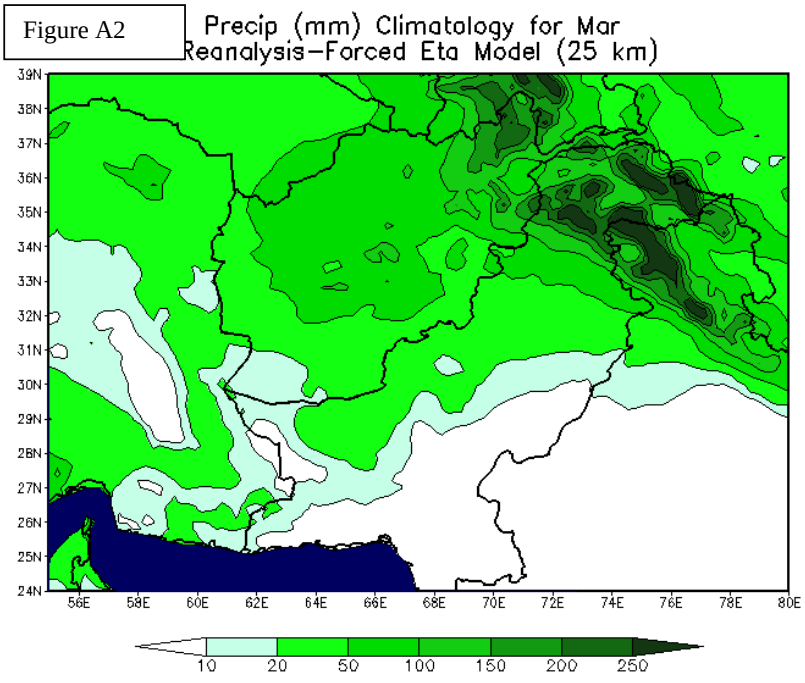


Figure A2



Appendix B

AIA Water Sector Ministries and Contacts

Ministry of Rural Development and Reconstruction

Contacts: His Excellency Abdul Malik Hanwar (Phone: 0046 73004 4487), Minister; Engr. Kamaluddin Nizami, Deputy Minister for Technical Affairs (Phone: 0087 376303 7651); Engr. Najibullah, Head of the Design Department; Mohammad Musa Sharifi, Head of Planning; Hayatullah Farhang, Head of Construction, graduate of Engineering Faculty 61; and Dr. Qasim Sharafmal, Head of Public Health Division. We met the Minister of Rural Development and Reconstruction on March 17, 2002, at 4:00 pm in his office. He is a graduate of Golbahar University, majoring in Chemistry. He is quite an inquisitive person eager to learn the latest developments pertinent to his ministry. His ministry deals with minor irrigation, water supply, and sanitation projects in rural areas. The ministry is divided into two parts, the Construction Section, which mainly deals with irrigation and transportation infrastructure, and Public Health, which deals with water supply. Small projects in village environments are the responsibility of the Ministry of Rural Development and Reconstruction.

The Ministry has one office in every provincial capital plus additional offices in some major districts. Altogether there are 2500 personnel working for the Ministry down from 23,000 in the late 70s. The Ministry needs qualified technical people to respond to the monumental task of development and reconstruction ahead of them.

The Construction Division has five engineers and twelve architects. Water Supply has twenty-five, and planning has eight engineers on their payroll. The average monthly salary of their engineers is about $20 compared to $150 to $200 in the private sector (NGOs and UN agencies). Recently, five professionals have joined the Ministry through the efforts of IOM.

The point that our hosts were making over and over again was that there is water in the rivers, and efforts should be made to construct or replace the diversion structures in the rivers and clean the water conveyance system. This point was also confirmed in my casual interviews with people from the northern parts of the country.

Most of the diversion structures in the rivers have been washed away by floods and high water and are in serious need of repair and replacement. Diversion structures in Ghorband, Bangi, and Keshm are but a few examples. The damaged structures are by and large in the northern parts of the country.

Destabilization of the Amu River banks in the Darqad area, which threatens the lives and property of the residents in that area, was another issue of concern to them.

Ministry of Irrigation

Contacts: His Excellency Mangal Hussain Ahmadzai (Phone: 0046 73004 4707), Minister; Mr. Sultan Mahmood, President (Director) of Irrigation. The Minister of Irrigation seemed to be very enthusiastic about USAID getting involved in some of his ministry's projects. He is a graduate of the Faculty of Agriculture and seems to be a professional. He gave a background for his ministry that went as follows:

Originally there was the Ministry of Agriculture and Livestock. Then it was split into the Ministry of Irrigation and Power and the Ministry of Agriculture. Then the Ministry of Irrigation and Power was further split into the Ministry of Irrigation and the Ministry of Power. Subsequently, they were amalgamated into the Ministry of Irrigation and Power, and now they are once again divided into the Ministry of Irrigation and the Ministry of Power.

Engr. Sultan Mahmood started by indicating that there are 2.6 to 2.8 million *ha* of land which could be under irrigation. However, the problems that they are facing is that many of the diversion dams in the rivers are destroyed. Siltation of canals has reduced the capacity of most of the canals. Mr. Mahmood was quoting a figure of 40%. Seasonal floods have caused damage to some agricultural land. He seemed to be an avid enthusiast for President Daud's (1973-1978) Seven Year Plan. He categorized the irrigation projects into three categories:

1. QIP (Quick Impact Projects) that the FAO and World Bank are also advocating. The number of these projects is 30 and could revitalize about 1.8 million *ha*. Six zones are surveyed.

2. Projects initiated during President Daud's time, but remained incomplete. These include Salma Dam in Herat, Kamal Khan Dam in Nimrouz, and Kukcha Canals and hydroelectric projects. One million *ha* of new land will be irrigated with the completion of these projects.

3. Projects where feasibility has been completed like Bakhshabad Dam on the Farah Road (river), Cheshma Shafa in Mazar, Khosh Tepa, Kelagai, and Kama.

Though these are projects that could result in substantial increases in grain and industrial crop production, it is extremely important to do a field assessment of these projects if and when funds are allocated to them.

Ministry of Power

Contact: Engr. Amin Munsif, Deputy Minister. As a result of the Bonn Agreement, the Ministry of Water Power was split to form the Ministries of Irrigation and Power. Although the Ministry of Power does not deal directly with irrigation, there is an overlapping responsibility when it comes to the use of dams which are used for hydroelectric power and irrigation.

There are about seventy projects that the Ministry of Power needs to place under construction and reconstruction. They are prioritized. Deputy Minister Munsif said that technical assistance is needed to survey and assess candidate projects.

He mentioned that by increasing the height of the dam in Kajaki, the capacity of the reservoir could be increased from 1.7 billion cubic meters to 2.7 billion cubic meters. Water storage could alleviate drought condition. He mentioned the immediate need for spare parts in the power house in Kajaki. This dam and its power house were built with American Aid. The electrical parts of the power house were supplied by GE, and the mechanical parts by Westinghouse. A technical expert assessment of the power house is needed.

Daroonta Dam in the east, near Jalalabad, needs dredging . They do not have the technical capability and the machinery to do the dredging. Naghloo Dam and Surobi Dam seem to be in acceptable condition. Mahipar Powerhouse is active only three months of the year because of low water flow during the rest of the year.

He mentioned that 94% of the population in Afghanistan is without electricity.

There are 6581 positions in the Ministry, of which 3500 are technical. There are 200 engineers working for the Ministry.

The Afghan Brishna Moassesa is in charge of the distribution of electricity in the country according to the following tariffs: 0-600 kwhr, 200 *afs*; 601-1000, 600 *afs*; 1000 and more, 900 *afs*. It generates a 10 to 15 % profit. There are different tariffs for diesel and imported power.

Ministry of Public Works

Contacts: His Excellency Abdul Khaliq Fazil (Phone: 0046 73004 4447), Minister; Engr. Paizar Patan, President (Director) Water Supply Authority. The Ministry of Public Works is responsible for water supply in large cities through its Water Supply Authority. The Minister of Public Works indicated that several countries have promised to help his ministry carry out its mission of supplying water to the larger cities. Through a bilateral agreement, Germany will supply the Ministry with 7.6 million Euros to rehabilitate the water supply of Kabul City. He indicated that drought has not been a major problem due to the recent snow and rain. He mentioned that he is planning to start an educational program on radio and TV to educate the public about water conservation.

He is also planning to reintroduce water meters so that people pay for what they use. However, he needs donors to provide him with meters. He plans to inspect all households for leaks in their piping systems.

Engineer Patan gave background information regarding water supply issues in Kabul. The first water supply project started 94 years ago in Kabul with the source of water from Dama Gah Spring; this was later supplemented by the Darakah Cheshma from Paghman. The fist major water supply project started in 1954-1964 with the Allauddin Deep wells project. The second project, the Afshar project, was constructed in two phases with help from the Germans. Phase I consisted of six wells with a capacity of 170 liters per second. Phase II, when completed, will consist of four wells. The Logar River Basin Project is by far the most promising one. The wells are there, but because of the lack of electricity, the pumps are not working. The aquifer that the wells are sunk into is one of the best around the city. The water table during the drought time has been at a depth of 1.7 m from the surface and at 1.1 m during normal years. The depth of the aquifer is 48 to 62 m with a length of 32 km. The recharge area is close to the mountains.

ICRC is helping to rehabilitate the Logar Basin projects (7 projects), CFW (Germans) is giving a 7.6 mill EU grant . Care International is helping with four projects. There are thirteen provinces with water supply system. Seven of them are 50 to 70 percent active while six systems are inactive. Eighteen provinces do not have any system at all.

Under normal circumstances, the Engineering Department has 36 engineers, but currently there are only 1.5 to 2 engineers. Unregulated wells have endangered aquifers and there is thus a clear need for aquifer protection regulations.

UN Agencies

The UN agencies are also suffering from the lack of coordination and duplication of activities in the water sector. I noticed that UNICEF is organizing a conference in which all water stakeholders are going to participate.

According to Engineer Omar of UNICEF, at the February meeting Ashraf Ghani emphasized the need for water management in Afghanistan. To that end, the Ministry of Irrigation is going to hold a conference of stakeholders to take place in late April at the Kabul Intercontinental Hotel. The conference, which will be funded by UNICEF, will hopefully will lead to a rapid assessment of the Water Sector in Afghanistan. The agenda for the meeting will be circulated to all interested parties for input and comment.

FAO, on the other hand, does not have any mandate from the UN on water issues. Nevertheless, their water team is very busy and holds meetings on a regular basis. The FAO team has completed a rapid assessment of the water situation in northern Afghanistan and has developed well-water guidelines to be adopted by the interested parties.

In addition to the above UN agencies, two others are extensively involved in water issues in Afghanistan, HABITAT and UNOPS. I met with HABITAT representative, Ms. Teresa Poppilwell on March 21, 2002. Also present were Dr. Michael Klinger, a geologist, and Joe Gadek, a World Bank consultant. According to Joe Gadek, the German Development Bank (KFW) will endeavor to provide water supplies and sewage systems to a population of half a billion in Kabul and twelve provincial capitals.

According to Dr. Klinger, who has visited Ghazni, Charikar, and Jalalabad, the drought in some areas is particularly severe. For example, in Jalalabad, the water level in shallow unconfined aquifers has dropped 8 to 9 meters. In Ghazni, the power supply has collapsed. According to him, generally there is no widespread effect of deep wells on shallow ones. His next trip will cover Mazar, Kunduz, Taloqan, Kandahar, Qalat, Heart, Qalai Naw, Sheberghan, and Farah.

HABITAT has worked on individual wells as well as about ten to fifteen Micro Neighborhood schemes involving water-supply augmentation. They have dug the wells in random locations, depending on the needs conveyed to them by the residents. There have not been systematic efforts to coordinate the wells with other ground sources of water like *karezes* and springs. They have drilled about 20 one-hundred-meter-deep wells in the different portions of the country.

Another UN agency dealing with water issues is UNOPS. They are primarily involved in rural development and training of citizens with disabilities for jobs. They are not a funding agency, but they execute projects. They have a total of forty engineers who work on quick impact projects. They organized a workshop on capacity building for RD, need assessment, and project documentation and are now planning to do one on project management in the near future.

Dr. Musa, Sanitary Engineer for WHO, described the activities of his agency as focused on reducing morbidity and mortality by improving sanitation. WHO is trying to accomplish that goal by encouraging pipes and chlorination.

WHO has had active projects in Kandahar, Jalalabad, Logar, Mazar, and Faizabad. The agency worked on a water supply project for Faizabad, in which they provided water to the city by connecting two reservoirs 8.5 km from the city to 1000-meter-high springs They completed the projects in two phases in 1996 and 2000. The unskilled labor part of the project cost them $1 million in the form of food for work. They have also worked on hygiene education and public health. WHO is helping the Ministry of Public Works in the establishment of a water-testing laboratory. They have also studied the feasibility of latrines in different parts of the country. Future projects include a drinking water supply for the city of Kunduz.

The Head of Logistics for WFP, Mr. Musa, had an interesting proposal, namely, that he wants to train the Ministry of Transportation in Logistics. He suggested that a donor like USAID proved a fleet of trucks to the Ministry so that they can take over the internal transportation.

Interview with a Taxi Driver from Dushi

During my stay in Kabul, I had extensive talks with men on the street like taxi drivers and shop keepers. People were very optimistic about the future. One such conversation was with a taxi driver from Dushi, located north of Salang highway. The inhabitants of Dushi are predominately Isameli,, and most of the land belongs to Said Kayan, their leader. The interviewee told me that the condition of the river is fine. The inhabitants double-crop land. In the fall, the land is cultivated for wheat, and in the summer for rice. The owner of the land takes half of the rice in lieu of a lease payment, but does not charge the farmer for growing wheat. A family can live off of a 0.7 *ha* plot of land.

I asked the taxi driver and other casual interviewees how they felt about AIA, ISAF, and the Americans. The respondents felt good about their presence in the country. Before going to Afghanistan, I felt that there would not be any type of skilled labor; however, to my astonishment, I discovered that there were almost all types skilled labor and craftsmen available in the city. Plumbers, painters, metal workers, mechanics, masons, and carpenters all seemed to be in ample supply and were busily engaged in doing all kinds of reconstruction work. A few of the water diversion structures on the Logar River that I visited were all designed and built by the Afghans. Even the steel control gates were manufactured in Kabul.

Non Governmental Agencies (NGOs)

The Afghan New Year's Day, *Nawruz*, was on Thursday, March 21. It was a public holiday. Friday is a regular holiday, and Sunday was the 10th of *Moharam*, a Muslim holiday. It was extremely hard to find anybody working on those days except the international organizations. From the many NGOs I visited, only Mercy Corps International (MCI), DACCAR, and MEDAIR personnel were available during the holiday period.

MCI has been working on projects in Afghanistan since 1986. They were mainly working in Kandahar, Uruzgan, and Helmand provinces.

MCI was working on drought relief (water projects) and veterinarian projects. Their water engineer, an Italian named Atilio is stationed in Quetta, Baluchistan region. MCI repaired part of the Kajaki Dam and some of the canal systems in the area. In Kandahar, because of the drilling of deep wells in the city, water became scarce. During the years of operation, there was no coordination between the NGOs and the government. Out in the provinces, the NGOs operated as they pleased, with no accountability and no coordination. Chaos reigned.

DACCAR, an NGO supported by the Danish government, has been active in southern Afghanistan for many years. Their focus has been integrated agricultural development, reconstruction of schools, and irrigation and water supply.

DACCAR has dug about 20,000 shallow and deep wells. Their database could be a valuable source of data for groundwater resource maps for areas south of the Hindukush Mountains. According to Engineer Fahim, DACCAR has a maintenance system in place where they reactivate older dried wells and inspect the ones that they have installed. Criteria used for drilling wells are that they should serve at least 15 to 20 families and be public. Funded by UNICEF, DACCAR revitalized the old water supply system in Lashkargah. In Charkh Logar, DACCAR provided 3,500 taps from a spring for public water supply.

MEDAIR, a Swiss-based relief and rehabilitation agency, has been present in Afghanistan since 1996. They have worked on some irrigation projects in the vicinity of Kabul using food for work supplied by WFP. One of the projects that they have worked on is the replacement of a stone dam which used to be washed away every year by high water.

Appendix C

TOR

Scope of Work: Rapid Assessment of the Water Sector--Afghanistan

Problem: Afghanistan is entering the fourth year of a severe drought. The allocation of use of remaining water sources and arable land requires immediate action. There are several new ministries in the Afghan Interim Administration (AIA) that claim responsibility for water management. A senior water advisor is required urgently to make a rapid assessment of the water situation in northern Afghanistan or other areas as appropriate and to meet with the AIA, NGOs, USAID, FAO and other organizations which are also concerned with water or irrigation projects.

Duration: To begin immediately in conjunction with the EGAT/AFS mission to Afghanistan on March 7, 2002. Approximately 7-10 workdays in Afghanistan; 1-2 days of consultation at USAID to follow; 2-3 workdays for writing the report.

Background: Northern Afghanistan is known as the breadbasket of the nation. The availability of water for irrigation, the fertile land, and the relative closeness of the population centers to the main national highway system are the main reasons for the reputation. The area has been famous for growing industrial crops and as well as cereal crops.

Afghanistan has two types of crops, rainfed (*lalmi*) and irrigated (*aabi* or *daimi*). For the rainfed crop to grow, it needs upward of 350 mm of rain, a quantity which is only available in the northern and northeastern parts of Afghanistan. Kabul receives about 200 mm of rainfall, while Baghlan, Pul-I-Khumry, Kunduz, Khanabad, and Takhar receive upward of 350 mm, an ideal amount for rainfed crops.

The rivers in Afghanistan rely on snowmelt in spring and summer. Water is diverted mainly from rivers in the area including Kunduz and Kukcha, and to a certain degree from the Amu River. Other water resources are from *karezes* and springs. *Karezes* are not as common in the north as they are in the southern and western parts of the country.

Due to many years of neglect and war, diversion structures and water delivery systems have been in a state of ruin. The UN and the majority of domestic and international NGOs have been concentrating their efforts in the eastern and southern parts and, to a certain extent, to the western parts of the country. Very few organizations have been working in northern Afghanistan.

In rural Afghanistan, in general, there is no distinction between the source of water for irrigation, human consumption, and animal consumption. If the source of water is a *karez* or a spring, the water is generally clean; however, if the source is a river or a canal, it is generally polluted and not good for human consumption.

The opening of the "Friendship Bridge" between Afghanistan and Uzbekistan and the opening of the Salang Highway between Kabul and the north should help expedite the process of reconstruction of agricultural infrastructure. The original highway loop that connected Kabul to major cities in the north is still usable to some degree.

Tasks: To achieve a quick assessment of the water situation in northern Afghanistan or other areas of Afghanistan, the following tasks will be conducted:

- Discussions in Kabul with national and international NGOs who have had successful water projects in Afghanistan, specifically in northern Afghanistan or other areas if necessary.

- Assessing and prioritizing areas for the rehabilitation of irrigation and other critical water supply infrastructure based on available data and discussions in Kabul, USAID, FAO, NGOs and the AIA.

- Identifying gaps in critical information and institutional and human capacity essential to guide the development of a future strategy for water resource management. Particular attention should be paid to the use of geographic information systems and products that would aid the development of an integrated approach to management of the water sector in Afghanistan.

- Identifying and discussing key contacts for the appropriate Afghan institutions; and discuss ways and means to take immediate and medium-term action for Afghan institutions, NGOs and donors.

- Developing a report that presents and discusses options to strengthen the Afghan government's strategic planning and policymaking capacity related to the management of water resources for the current protracted drought and beyond, including the following and other aspects that can be justified: policy and regulatory framework; domestic water supply and sanitation; water for agriculture and the drought; institutional development, capacity building and public sector institutions; environmental concerns. Because of the severity of the drought, domestic water supply, health, and sanitation are critical, immediate concerns for at least another 6-12 months. Therefore, options and recommendations should begin by ensuring that water sector interventions permit households and communities to meet minimum water supply and sanitation requirements, i.e., the "Sphere Water and Sanitation Standards" (http://www.sphereproject.org/handbook/watsan.htm) as development of the water sector strategy proceeds.

  The above SOW may be modified as conditions in the field may be different.

Reporting Relationships: The Advisor is to coordinate his work with the Central Asia Task Force and the EGAT. In the field, the Advisor will report to the USAID mission. In Washington, the Advisor will report to EGAT. The Advisor will also coordinate his assessment activities with the assessment of Sue Lautze and with the assessments of the water sector by ICARDA, ADB, FAO and EGAT.

Deliverables: A written report including all elements of the tasks above: an executive summary, major findings and conclusions; major recommendations, ranked by priority for the immediate, intermediate and long term, with explanations of each finding; analysis of institutions and relationships; key contacts; description and rationale for a water sector strategy for the AIA that is based on an integrated approach; and identification of key information and human resources gaps. Delivery to the CATF and EGAT no later than ten days after return to the U.S. 5 hard copies; 5 copies on diskette.

Qualifications of Advisor: Ph.D. or MSc. in water or irrigation science or a related field such as civil engineering. Experience and knowledge of integrated water management. Relevant regional experience—Afghan, Afghan-Americans or expatriates with language skills are highly desirable. Immediate availability is required.