

# RESOURCE

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## A World of Water in Crisis

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# Afghan “Ambassador”

Professor advises war-torn country on water resources

Guy Fipps



Fipps marks the map where his journeys have taken him – charting a new course for water policy.

It was December 2005. As I boarded a plane at Dullus, headed for Kabul with a diplomatic passport in hand, I felt a little overwhelmed. I had just spent a week in Washington, D.C., in meetings at the U.S. Department of State (State) and the Pentagon, and had been sworn-in in my temporary appointment with State as the Senior Advisor for Water.

Some called me the U.S. “ambassador for water,” and in a lot of ways, I suppose, I was. I lived and worked at the U.S. Embassy in Kabul, Afghanistan, for nine months, reported directly to the U.S. ambassador, and was charged with charting a new course for water policy and aid in this war-torn country.

## Little did I know ...

... what was in store for me in the long series of flights that took me first to Dubai and then on to Kabul. During my tour, diplomatic status got me access to the highest levels of the Afghan government, but it was my technical expertise and reputation as an agricultural engineer that got me out of Kabul.

In addition to conducting strategic analysis, water planning, and advising for the Afghan government, I was sought out for my technical knowledge by the U.S. Agency for International Development (USAID), the military, and non-governmental organizations (NGOs). With help from the military and the United Nations, I traveled throughout 14 provinces in Afghanistan, examining the country's water infrastructure, evaluating issues and, finally, recommending solutions.

I worked closely with the Afghan deputy minister for water and the first vice president in developing a strategy and an organizational framework to address the highly contentious issues related to water use, allocations, and development.

### **Without question, water has the same urgency as security, energy, and roads...**

#### **Water is recognized as a key ...**

... and usually as *the* key, to Afghanistan's future. About 85 percent of the population is involved in irrigation-dependent agriculture, and 98 percent of all water diverted from the rivers is used by agriculture, with 60 percent or more of that water lost to seepage and poor on-farm efficiency. In addition, irrigation canal systems also provide drinking water to the vast majority of the population.

After 20 years of war, Soviet occupation, and then Taliban rule, what little water infrastructure for irrigation and domestic drinking water the country had was destroyed or had deteriorated. Only 30 percent of the irrigation infrastructure is functioning, and modern domestic water supply and waste treatment systems do not exist.

Without question, water has the same urgency as security, energy, and roads (the key elements of the U.S.

efforts in Afghanistan), and water is even more critical to the long-term stability and economic development of the country. Without effective programs, water shortages, internal water conflicts, and international water disputes will increase and become more serious with destabilizing consequences.

#### **The timing of my arrival...**

... could not have been more auspicious. State and USAID had just finalized a decision to terminate our water development programs because of failure to produce meaningful results in spite of hundreds of millions of dollars. Thus, I spent my time at the embassy trying to make the case for why the United States needed to be actively engaged in the water sector.

Since the majority of the population is involved in agriculture, improving irrigated agricultural production and livelihoods is critical for maintaining social order. With so many refugees who fled the country during the Soviet occupation and Taliban rule returning, there is need to develop new irrigated farmland for displaced people, some of whom are involved in the insurgency. The thinking is that by getting them back into Afghan society through farming, they will no longer need to seek payment from the insurgency, a view which is held by the U.S. military.

In May 2006, I presented my official water policy assessment to the ambassador and other policymakers in the U.S. mission to Afghanistan. My assessment was that water should be a component of our aid package and concentrated in high priority areas not being addressed by other donors.

My assessment also included nine specific recommendations including rehabilitation of irrigation systems and increasing the water supply, as there is an urgent need for rural residents to see some benefits from the

new government. The rural economy and standard of living would improve vastly if the traditional two-crops-per-year system could be reestablished, and that system would reduce the need for farmers to grow poppies.

Another major problem I saw repeatedly when outside of Kabul was the lack of standards for the water infrastructure projects being implemented: poor workmanship, inadequate design, and improper materials resulting in projects that would likely fail within a few years. The United Nations had standards for their projects; thus, we needed a way to get these out to others.

I also spent a lot of time on trans-boundary water issues due to their potential to impact the long-term stability of the country and region, a policy area that was receiving no attention from State. My biggest success in this area was helping to implement a memorandum of understanding between Afghanistan and neighboring Tajikistan to cooperate on joint development of water resources, such as a large hydro facility on the Amu Daya River. The first step for Afghanistan and the easiest compared to Iran and Pakistan, which were yet to come.

Other threats I identified were rapid and uncontrolled exploration of groundwater, conflicts between up-stream and down-stream water users, the lack of water laws and regulations, and reoccurring droughts. The Embassy itself depends upon groundwater, which was quickly depleting and contaminated in the Kabul Basin.

#### **Some of my best memories ...**

... are of spending time with the military. Because of my diplomatic status, I was required to stay at military bases when traveling outside of Kabul. I visited about 12 provincial reconstruction teams



(PRTs), which are military units that provide regional security and fund reconstruction projects.

Because of my engineering background, I was able to help the PRTs in what they were trying to accomplish while they provided me the means to get out and about in the countryside. It is a rather unique experience to be taken out to look at an irrigation project escorted by three to four Humvees and guarded by 10 or more armed soldiers.

It is also amazing how routine wearing body armor and riding around with soldiers can become; I developed a great respect for the military. All Americans should be proud of our young men and women serving in Afghanistan. They are very dedicated

and committed to the mission in spite of the tough and dangerous conditions they face.

### **I had a heavy heart ...**

... when I left Kabul to return to the United States. I was not sure if I had been successful in changing U.S. policy in water. The last few months at the Embassy were not easy. Some USAID officials were angry with me for questioning the decision to terminate water programs.

Over the next few months, by e-mail and telephone, I continued to advise PRTs on projects, arranged a shipment of polypipe to the 10th Mountain Division for projects in the volatile Khost Province, and helped

work out details on the Tajik Memorandum of Understanding with State and the Afghan government.

Then in December 2006, the Afghan government sent a request to the U.S. Ambassador to bring me back to help draft a transboundary water policy for the country. About the same time, USAID contacted me to see if I would be willing to return for a couple of weeks of strategic planning in the water sector.

In April 2007, I found myself once again on a long series of flights to Dubai and on to Kabul for a month back in Afghanistan. The Ambassador sent me an e-mail just before I left, saying how glad he was that I was returning.

It was strange to go back to the U.S. Embassy where I had spent so many months living and working: an armed compound surrounded by 10-foot walls topped with barbed wire and guard towers.

### **Satisfaction upon return**

Seven out of the nine recommendations I presented during my water sector assessment the previous year had been implemented! Looking back, I feel humbled that I was asked to go to Afghanistan and am honored to have served my county.

The memories of riding in armored vehicles, going out on missions being escorted by soldiers, and staying on military bases is something that will never leave me. The warmth of the Afghan people and the sheer beauty of the country also fill my reminiscences.

There is no doubt that my eventual success in Afghanistan was due to my background and experience as an agricultural engineer, a profession that has taught me how to solve problems by getting out and assessing a situation. The diplomatic passport got me in the door, but my technical background helped establish credibility and, just as important, got me out of Kabul.

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**"The body armor and helmet were mine, but the gun wasn't," says Fipps. "The soldiers who were taking me out on the mission that day had me pose with the gun. My staff likes the photo, and they joke about posting in the office with a caption, 'Get the job done!' The other caption that was used around the embassy in Kabul was 'Water is NOT a four letter word,' in reference to the static I was getting from USAID on my recommendations."**

*ASABE member Guy Fipps, a Texas A&M University Department of Biological and Agricultural Engineering professor, spent nine months in Afghanistan as senior advisor for Water of the Afghan Reconstruction Group. The following is an excerpt from his journal, which recounts an agricultural event: Afghan farmers and their families rebuilding an irrigation water diversion dike.*

“Kunduz is the capital of Kunduz Province in Northern Afghanistan, a regional center surrounded by vast expanses of agricultural land. Every trip out is eye-opening, but in Kunduz, I saw something really extraordinary: the construction of an irrigation diversion dike using methods and materials that have not changed for centuries, maybe for thousands of years....

For thousands of years people have lived along the rivers of what is now Afghanistan and diverted water into hand-dug canals to irrigate their crops. Taking advantage of the mountains and slopes, a single canal can run many miles and provide water to many villages, tens of thousands of people, and large irrigated areas.

Afghans construct earthen dikes extending out into the river to divert water. Unfortunately, these dikes frequently wash out when the rivers rise in the spring and early summer as the melting of the mountain snow accelerates. It is the snow that falls in winter that gives water and life to this arid land.

Such was the case of the Kunduz canal. Just three days ago, a weekend rainstorm caused the river to rise high enough to completely wash out the existing diversion dike. Now, very little water is flowing into their canal, and approximately 20,000 families cannot irrigate their crops. It's early in the growing season; plants are short and cannot go more than a week without water. As of today, the local farmers have only five days to get the dike rebuilt before facing the danger of crop failure.



**It's a long walk from the clog piles; to the left is the Kunduz canal seen flowing alongside the river.**

*“There are lots of disadvantages to these structures,” Fipps said. “They wash out two or three times a year, and they don't provide good control of water. It's a big strain on their subsistence economy to take the time to rebuild the dikes. But they work.”*



**The dike quickly begins to form.**

We're amazed at the size of the operation: approximately 400 men and adolescents hard at work. And what an operation it is. The men are divided into several different work crews. One crew digs up large dirt clogs topped with grass, each weighing around 50 pounds. The Afghans hope that the grass will take root and help hold the dikes together.

A group of men are busy weaving ropes from a thick



**Thick reed is woven into ropes.**

straw that looks like dried water reeds. Some of these ropes are used by the men to cradle the dirt clogs on their backs. A group of men lift the dirt clogs and help secure them on the backs of the workers who then carry them to the river and wade out into the moving water to drop them onto the expanding dike. Layers of clogs and straw are built up, and the dike is extended farther into the river.

*Continued on page 26*





Young and old head back to shore for more dirt clogs.



Villagers remain in good spirits in spite of the hard work.

The work is very hard and demanding; it must be extremely difficult, first carrying a large load of dirt on your back, and then wading through the water with the thick under footing of river bottom silt ...

We watch as the dike quickly forms and extends farther into the river. Such a massive and organized operation is amazing and fascinating to see. Each farmer along the canal contributed labor or money proportionally to the size of his land.

I watch as the straw-men make huge rectangular bales of dried reeds held together by the thick ropes of woven straw. Finally, their purpose becomes clear. As the dike is constructed, gaps are left in the dike in order to reduce the pressure and erosion caused by the moving



One of several large bails is used to plug the pressure release gaps in the dike.

water in the river. It takes 20 men to roll the huge bales into the river and to float them out to the dike to plug these gaps. Dirt clogs are then layered on the straw bales to complete the dike.

The dike will wash out a few times a year, taking money and labor away from cultivation and harvesting of crops, further hurting the subsistence agriculture of the region.

### Three weeks later ...

I visited the site. The dike is still standing even though the river has already risen a foot since my last visit. The dike is working perfectly and diverts large amounts of water into the canal."

### TAKING CONTROL WITH SMART CONTROLLERS

*continued from page 15*

up allows irrigation to closely follow crop ET. Better management of irrigation water in the root zone also leads to better management of soluble chemicals such as nitrate nitrogen. Excessive water often leads to leaching of nitrate in these soils. We have also shown that leachate volume and nitrogen percolate below the root zone have been reduced due to SMS irrigation control. Similar to the residential irrigation controller research, the next step with the vegetable irrigation research is to implement and demonstrate SMS automatic irrigation control on commercial farms.

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