



Afghan elite. Graduates at American University of Afghanistan in Kabul celebrate, but their career plans are uncertain.

satisfy the country's desperate need for technical talent. "After 3 decades of war, Afghanistan has lost one-and-a-half generations of experts in all fields," says Timor Saffary, the head of AUAF's department of science and mathematics. "The intellectual elites either left the country or have passed away, leaving a huge vacuum." Saffary earned Ph.D.s in both mathematics and physics and worked as a postdoctoral researcher in Germany before joining AUAF in 2009, and the 39-year-old native of Kabul hopes to be a part of the generation who fills that vacuum.

With the help of the United States and other countries, Afghan academics are beginning to pick up the pieces. But a deadline looms: International military forces are preparing to leave the country

by the end of 2014, and it's anybody's guess what will happen after they are gone. "Many of the highest qualified and talented academics are looking nervously at the 2014 withdrawal," says Michael Petterson, a geologist at the University of Leicester in the United Kingdom who leads field research and training workshops in the region. "And who can blame them?"

HIGHER EDUCATION

Can Afghan Universities Recover From War, Taliban, and Neglect?

The demand for technical talent and outside funding is helping colleges get back on their feet. But higher education is still not a priority

KABUL—Except for the armed guards in body armor at the entrance, on the roof, and patrolling the campus, this college graduation ceremony could be taking place anywhere. Students in black gowns and mortarboards are grinning for photographs with their families as the registrar hurries through the crowd, urging people to take their seats.

But once the keynote speaker takes the stage, the difference between this ceremony and countless others becomes clear. For starters, it celebrates one of the first graduating classes at Afghanistan's only elite private institution for higher learning, American University of Afghanistan (AUAF). And the speaker, chemist Akram Fazel, is asking the students *not* to follow in his footsteps.

To be sure, Fazel has enjoyed a first-class education and ample success. Indeed, he has lived the life many dream of. After gradu-

ating from high school in Kabul, Fazel left Afghanistan and eventually earned a Ph.D. in chemistry in the United States, at the State University of New York, Binghamton. He worked for Danone, the multinational food and cosmetics company, and rose to become director of research before starting his own biotech consulting firm based in Paris and Shanghai.

Speaking in Dari, one of the country's two main languages, Fazel says that the next generation of Afghan scholars should eschew globetrotting and put their expertise to work at home. "It is up to you to rebuild this country," he tells the 45 students who are receiving their bachelor's degrees on this scorching day in May.

Now chair of the board of trustees of this 6-year-old institution, Fazel knows as well as anyone that the tiny graduating class can't

Afghan ivy

What returning Afghan academics have found is a once-proud system of higher education on the rebound after hitting rock bottom a decade ago. In 2002, Afghanistan had 12 barely functioning universities; now it has 30, and they enroll roughly 100,000 students. Secondary education has enjoyed an even more impressive recovery, with the number of high school graduates increasing sevenfold since 2002.

In fact, that surge has overwhelmed the country's system of higher education. Admission to public universities is based on a nationally administered exam, and students pay no tuition. The Ministry of Higher Education projects that, without a significant increase in capacity, universities will be able to offer spots to only one in 10 students who apply in 2014.

The anticipated leap in demand was one reason the government created AUAF as the country's only not-for-profit, private and independent university. The U.S. government is its main funder: The U.S. Agency for International Development (USAID) has spent \$200 million on higher education programs in Afghanistan since 2002, and half of its current tranche of \$90 million for program funds is designated for AUAF. USAID Administrator Rajiv Shah calls the school a "best-in-class institutional partner" and says the university is intended to show "the value of true, high-quality higher education in helping societies grow and develop."

Although AUAF operates under a charter from the government, an independent board of trustees sets its policies. At \$5500 a year, tuition is beyond the reach of all but the wealthiest Afghan families, and 70% of its students receive financial aid.

Sharif Fayeze, a Persian literature scholar who helped launch AUAF as then-minister of higher education, says that a Western-style university is needed not just to attract the best students "but also the best faculty." A typical public university professor earns less than \$500 a month, while AUAF faculty salaries are competitive with those at Western universities. In return, all faculty members are expected to hold an advanced



Homeward. Muhammad Mujtaba plans to return to Afghanistan after U.S. graduate training.

ican University [in] Cairo [for] 20 years." That university had weaned itself from U.S. funding and was self-sustaining at that point, he adds.

AUAF has similarly lofty aspirations, and it's moved with deliberate speed in building its capacity. It currently offers students three undergraduate degrees, with the vast majority choosing business and finance. (Computer science/information technology and political science/public administration are the other two bachelor's-level programs.) There are seven faculty members in its science and mathematics department, which offers a variety of introductory and mid-level courses. Some 500 students are enrolled in its undergraduate degree programs, with a similar number pursuing English-language studies. Another 800 students are taking short courses in various fields offered by the university's professional development institute. Fazel says that chemistry and earth science degrees are next on his wish list.

A history of violence

But while AUAF may ultimately train the elites, the vast majority of Afghans seeking higher education will find it in the public university system. And that system is creaking.

Only a 10-minute drive away, Kabul University represents the yin to AUAF's yang on the circle of Afghan higher education.

Its leafy, walled-in campus serves as a quiet oasis in a city that struggles to provide even the most basic amenities—water, power, waste disposal—for its 5 million residents. Its 20,000 students make it by far the largest university in the country.

Founded in 1931, Kabul University is also the country's most prestigious, and its science programs are bulging at the seams. "This is introductory physics," says Mohammad Arif, a chemist and dean of the faculty of science, poking his head into a lecture hall. The sweltering, windowless hall, with hundreds of students crammed into every seat right up to the top wings, looks more like the setting for a rock concert than a physics class.

"We are at double capacity," Arif says. Some 1500 students are pursuing science and math degrees in the departments under his watch. The total does not include applied science majors in the university's schools of engineering, agriculture, and medicine.

The current situation is a far cry from the recent past, says the 62-year-old Arif, who has taught at Kabul for 2 decades. "In the days of the Taliban, it was normal to have only one or two students in our classes," says Arif, a cosmopolitan intellectual who was forced to wear a beard and turban during their reign. And that era was only the latest insult to the country's system of higher education.

Arif had just finished his Ph.D. in chemistry in Moscow in 1979 when the Soviet Union invaded his homeland. "That's when everything fell apart," he says. The departure of Soviet troops in 1989 led to a civil war that subsided when the Taliban took over. "We just never recovered."

The U.S. invasion in 2001 offered a ray of hope for Afghan academics. But so far job training has been the highest priority. "We actually put far more resources into vocational training in communities—essentially the Afghan version of community colleges," says Shah about USAID's portfolio.

The Afghan government spends about \$35 million a year on higher education, most of it for administration, faculty salaries, and routine maintenance. Other requests wind up in the back of the queue. Two years ago, for example, Arif applied to the ministry for funds to update the chemistry labs. "I still have not heard back," he says.

The other science disciplines are also languishing. "This is our physics lab," he says, unlocking a tiny room. Old and battered oscilloscopes, scales, and voltmeters are laid out at a dozen stations along the walls. "They were donated by Germany probably



Opportunity. Women engineers are taking advantage of an internship program for fourth-year college students.

degree. (The figure is 40% for all Afghan universities, up from 30% in 2008.)

"We've had a lot of success with this model over the course of USAID's history," Shah says. "It was actually the American University [in] Cairo that brought a lot of technology industries to Egypt. And a lot of the people who led the efforts in Tahrir Square were graduates of a social mobilization and technology class taught at the Amer-

30 years ago. We don't have enough lab equipment to teach the basics, and our textbooks are completely outdated."

It wasn't always so. During the Cold War, the United States and the Soviet Union competed with each other to invest in Afghan higher education. "The early 1960s was a golden age," says AUAF's Faye. There were academic exchanges and research collaborations with U.S. universities such as Purdue University, the University of Wyoming, and the University of Nebraska, Omaha. Columbia University went a step further, building an institute in Kabul to train future teachers. Faye was one of many Afghans in the program, which included a year in New York City.

Not to be outdone, the Soviet Union invested heavily in science and engineering. It helped to build up Kabul's polytechnic universities, and by the 1970s Afghan academics were shuttling constantly between Moscow and Kabul. One reminder of that partnership is the fact that the older generation of Afghan scientists and engineers, like Arif, are just as likely to speak Russian as English. But the Soviet invasion soured that relationship.

Problems as opportunities

Getting accurate demographic statistics in Afghanistan is notoriously difficult. But 3 decades of war have certainly exerted a heavy toll on the country. When U.S.-led forces arrived in 2001, Afghanistan ranked near the bottom of every global index for wealth, public health, and education. Girls were forbidden from attending school. While neighboring Pakistan managed to double its literacy rate during that period, to 50%, fewer than 20% of Afghans were literate.

A decade later, Afghanistan's problems remain, but the trends are more encouraging. Literacy has reached 28% and is climbing. Only a third of students are female, but the gap is narrowing. "In primary education alone, we've gone from about 2 million kids in school, with almost no girls, to 8 million kids in school, more than 3 million of whom are girls," says USAID's Shah. "I think those 3 million girls going to school every year is a huge accomplishment America should be proud of."

Stroll through Kabul and its problems are all too clear. Packs of feral dogs compete with begging children for street corners. Some of the larger roads now have gutters, but elsewhere rubbish accumulates like snow drifts. Fewer than 10% of the city's roads are paved, and stinging red dust min-



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**—USAID ADMINISTRATOR RAJIV SHAH,
AT SITE OF REBUILT GHAZI HIGH SCHOOL**

gles with the smog. Traffic accidents are too common to attract notice, with cars navigating almost entirely without rules or street signs. And this is the capital city, the epicenter and criterion for international funding.

Then again, it is exactly these problems that appeal to scientifically trained Afghans like Muhammad Mujtaba, an engineering graduate student at the University of Missouri, Columbia. "I would like to bring a real change to the environmental situation in Kabul," he says. He plans to return to Kabul next year to work as a civil engineer.

Agriculture is another area where, as Fazel says, "problems are also opportunities." For most Afghans, modern agricultural techniques, especially irrigation systems adapted to the country's complex, water-deprived environment, have barely arrived. "Agricultural engineering can make a huge difference here," Fazel says. There's also the challenge of finding a crop as profitable as poppy; Afghanistan is the largest producer of opium in the world.

And then there are the opportunities hidden underground. Foreign nations have been scrambling for the chance to share in the country's mineral wealth. The U.S. government announced in 2010 that geologic

surveys had found that Afghanistan has enough iron and copper to make it one of the world's top producers. A Chinese mining company was the first to secure digging rights, and a Chinese-owned copper mine in southern Afghanistan is expected to become the largest foreign commercial investment in the country when it opens in 2014.

But those activities won't generate many well-paying jobs for Afghans unless the universities can provide the appropriate training. "[We] lack the skills and preparedness for such work," says Nasir Shir, one of Afghanistan's leading geographers, who is based in Kabul and at the University of Maine, Portland. Afghan universities have embraced the challenge of generating the relevant expertise. Last year, for example, Kabul University began a master's degree program in physics, its first graduate program in the sciences.

Fazel says the Afghan government needs better scientific advice to take advantage of these opportunities. For the

past several years, he and a small group of Afghan scientists have been pushing for a national science council that would report directly to the Afghan president, along with a national research center that would focus on the country's top priorities: "agriculture, healthcare, mining, and [information technologies]." In spite of the group's influence and energy, however, the government has shown little interest in either idea. Short-term security has trumped longer-term priorities such as science, he says, and security is likely to remain a priority after the 2014 troop withdrawal.

Back on the AUAF campus, the graduation goes off without a hitch. As the families head home, the guards look relieved. Fazel is bothered by the razor wire topping the high walls. "I look at this and I feel ashamed. A university should be an open place," he says.

But the students take no notice. They gather on the lawn one last time for a celebration that would have been punishable by death only a decade ago: Pop music blares from a stereo and everyone dances. It's not rocket science, but it's a start.

—JOHN BOHANNON

With reporting by Jon Cohen in Washington, D.C.