



Delivering a message. Turkish engineers and architects assemble on 13 July for march on Taksim Square.

TURKEY

For Scientists, Protests Morph Into Fight for Academic Freedom

ISTANBUL, TURKEY—Clearly exhausted, molecular biologist Aslı Tolun smiles wanly as she offers a tangerine from a fruit bowl here in her office at Boğaziçi University in Turkey. Down the hall, her lab is empty. Her graduate students were supposed to administer final exams to undergrads this morning, but they spent all night playing cat and mouse with riot police and are now sleeping. Tolun filled in for them in the exam hall.

The unrest that has gripped the country since May has ebbed a bit. But for Turkish scientists like Tolun, the irony of their situation is starker than ever. On the one hand, tensions between the mostly secular scientific community and the conservative Islamic government are intensifying, encouraging many academics and students to join the still simmering demonstrations. On the other, sci-

ence is at the heart of the government's ambitions and the focus of its largesse.

"We have ambitious goals," says Cevahir Uz Kurt, general director of the Directorate General for Science and Technology of the Ministry of Science, Industry and Technology. By 2023, the 100th anniversary of Turkey's founding, the ruling Justice and Development (AK) Party led by Prime Minister Recep Tayyip Erdoğan aims to triple public research spending to 3% of the gross domestic product, more than quadruple the number of full-time scientists to 300,000, and boost output of peer-reviewed papers to levels comparable with those of countries in Western Europe. Meanwhile, two megaprojects aim to lure back expat talent. Workers have just broken ground on Bio Istanbul, a \$1 billion research hospital and real estate devel-

opment on the city's outskirts. The other is still in planning: a Turkish space agency with its own spacecraft.

The government is already backing its words with cash. The annual budget of the Scientific and Technological Research Council of Turkey (TÜBİTAK), the country's monolithic science-funding agency, has shot up 50-fold over the past decade to nearly \$500 million in 2012, accounting for the lion's share of central government spending on science; much of that goes to applied research (see graphics on facing page). And across the country, the number of universities has ballooned from 70 a decade ago to 174 today. Many university research labs now measure up to well-funded counterparts in Western Europe and the United States. "State-of-the-art microscopes, brain-scanning equipment: We get whatever we need," says Umran İnan, president of Koç University, perched on a mountain overlooking the Bosphorus strait that divides Istanbul.

But it will take more than lavish spending to buoy Turkey's dispirited academics. "Increasingly, the government tries to control every aspect of life," says a biologist who requested anonymity. Ecologists fear that a draft law will harm biodiversity for the sake of infrastructure (see below). Scientists also complain about dictums to steer clear of sensitive topics like evolution and anything that touches on religion and to shift research priorities to applied topics such as "clean coal" or "biomedical instruments." Such pressure may backfire, warns one dis-

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Fragile Wetland Will Test Turkey's Resolve In Protecting Biodiversity

Çağan Şekercioğlu is in a race with the bulldozers. The Turkish ornithologist is based at the University of Utah in Salt Lake City, but these days he spends most of his time in a wetland in eastern Turkey. Just 10 square kilometers in area, the Aras River Bird Paradise is home to 36 threatened or endangered species and is one of a handful of long-term ecological research sites in Turkey. Şekercioğlu is trying to document Aras's biodiversity before construction starts on a dam that will flood the wetlands and, he and others say, destroy the fragile habitat.

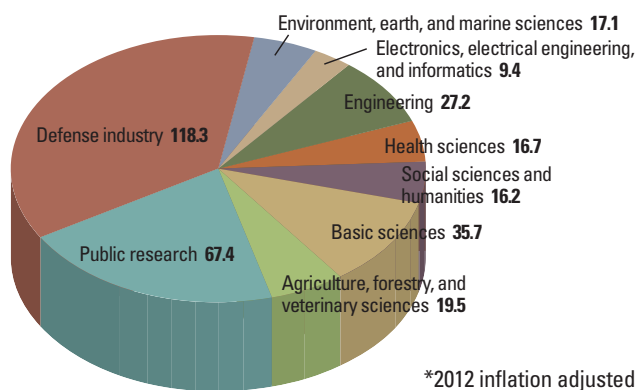
Vision of the future? Turkey has already dammed the Aras River upstream.

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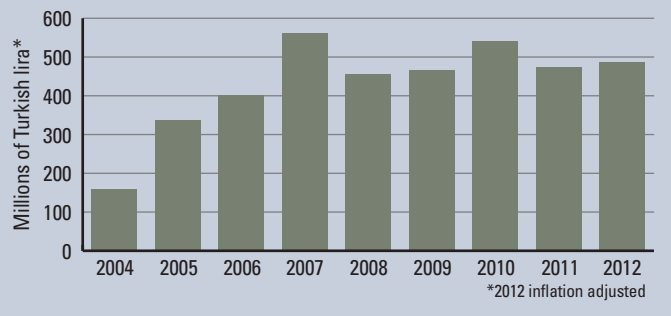
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2012 Funding by Sector

in millions of Turkish lira*



TÜBİTAK: Innovation Funding



Applying their minds. TÜBİTAK funding for industry, technology, and innovation has risen steadily since 2004 (*top*); a healthy proportion of funding in its main grants program goes to defense research (*left*).

grunted biologist: “We will have to leave if things get worse.”

Freedom fighters

Scientists, especially those who trained abroad, have long chafed against the authorities here. “Turkish academia has always been oppressive,” says Erol Akçay, an evolutionary biologist now at Princeton University. “It is so very top-down organized,” he says. Freedoms that scientists elsewhere take for granted—buying research materials, for example, or attending scientific meetings—require permission slips from bureaucrats. Displease the authorities, Akçay says, and “they can burn your career” by, for example, depriving you of TÜBİTAK funding. “The overall effect is very chilling.”

When the AK party was elected to power in 2002, it largely took a hands-off approach to academia. But over the past few years, Akçay says, political meddling with academia “has gotten worse.” In 2011, the AK party seized control of the Turkish Academy of Sciences. The reason: The academy “was far from representing the Turkish national scientific community,” says its

newly appointed president, Ahmet Cevat Acar, a professor in the School of Business Administration at Istanbul University. The root of the academy’s ills, he says, is that “nomination for the membership was only by the existing members. ... This paved the way for inbreeding.”

The takeover did not sit well with most scientists. The academy has become “a body with a majority of members appointed by government and with weak, to say the least, scientific and scholarly records,” says Mehmet Ali Alpar, an astrophysicist here at Sabancı University. He joined a mass exodus from the academy—just 30 of the 150 original members remain—and now leads a new opposition academy.

The government has since intervened more boldly in other aspects of scientific discourse. Evolution is a frequent target. For example, a government-run censorship program has blocked websites with educational content related to evolutionary biology. And last month, TÜBİTAK rejected a grant application for a summer school on quantitative evolutionary biology on the grounds that “evolution is a controversial subject.”

In the meantime, TÜBİTAK’s rising fortunes have come with strings attached. “Most of the money does not flow into basic research,” says Akçay, who has tracked the government’s annual research spending. Alpar asserts that funding decisions are often made by panels stacked with unqualified reviewers. “Ostensibly the panels are meant to be representative, by which [the government] means all universities from all over the country,” he says. “This does not, however, produce scientific quality.”

Uzkurt, an engineer by training, brushes off the criticisms. “There might be some reactions to the reform of the higher education system,” he says. But ultimately, he contends, the changes that the government is bringing about “will contribute to develop, among other things, academic freedom.”

Many scientists-cum-demonstrators see the exact opposite happening. “My graduate students have been out protesting, and I join to protect them from harm,” says one Turkish biologist. “By day we work as scientists, and by night we are protestors,” another says. “This is a fight for freedom of thought.”

—JOHN BOHANNON

Aras is one of dozens of battlegrounds where Turkish scientists and their government are fighting over the environment. The ruling AK party intends to double the number of hydroelectric dams to more than 600 as part of an ambitious 10-year plan to transform the country (see p. 332). Recent dam-building has already destroyed several wetlands.

The Turkish government deserves kudos for improving the nation’s air and water quality, says Raşit Bilgin, an evolutionary biologist at Boğaziçi University in Istanbul. But new laws are systematically undermining environmental protection, he and others say. Laws passed in 2010 and 2011 permit mineral exploration in protected areas. In June, the Ministry of Forestry and Water Affairs abolished a requirement for environment impact assessments before infrastructure projects such as bridges and dams are started. A draft law now in parliament would go even further,

allowing dams to be built in protected habitats.

Just last month, Şekercioğlu thought he had staved off disaster for Aras. Some 8000 people, including dozens of overseas scientists, signed a petition to the government to cancel the plan to dam the Aras River. Responding to the barrage of concern, the forestry ministry on 18 June recommended that Aras be declared a Nature Conservation Area. Şekercioğlu’s elation drained away a day later, when he discovered that the protected status needs the assent of 10 other government agencies—including the State Hydraulic Works, which awarded the contract to the dam-building company. “Of course they will oppose this and they are very powerful,” Şekercioğlu says. He doesn’t see favorable odds for the Bird Paradise. “Its chances are less than even,” he says. “But I will keep fighting until the end.”

—J. B.