



Widespread protests have brought down Tunisia's authoritarian regime.

POLICY

Tunisian scientists rejoice at freedom

As revolution reshapes the country, researchers lay plans for a system that will foster free thinking and innovation.

BY DECLAN BUTLER

“A historic event, a real revolution,” says one Tunisian researcher. “Proud to find a Tunisia liberated, that has found its freedom of speech, and its dignity,” says another. “Truly the revolution of all a people,” adds a third.

Tunisian scientists contacted by *Nature* could barely contain their emotions about the uprising that this month overthrew President Zine el-Abidine Ben Ali, the dictator who had ruled their country for the past 23 years. Although aware of the challenges ahead, many are convinced that a new era of democracy, human rights and academic freedom will prevail — and help to unleash a surge of creative and entrepreneurial forces among a highly qualified but repressed Tunisian population.

The country has experienced dizzying change since the self-immolation of Mohamed Bouazizi, a poor street vendor, in the southern town of Sidi Bouzid on 17 December triggered a nationwide revolt. Ben Ali was forced to flee

the country on 14 January, ending the de facto single-party rule of his Constitutional Democratic Rally (RDC) party.

Students and intellectuals are often in the vanguard of revolutions, but this was not the case in Tunisia. Instead, broad segments of Tunisia's relatively highly educated youth rose up to protest against high levels of unemployment, government corruption and a dearth of human rights, says Abdelaziz Chikhaoui, an engineering scientist at the University of Provence Aix-Marseille in France, and president of the Association of Tunisian Researchers and Lecturers in France (ACETEF).

“The revolution was unexpected both in intensity and rapidity, we were all surprised by the movement,” says Hamed Ben Dhia, president of Tunisia's University of Sfax, who is considered by colleagues to be relatively independent of the Ben Ali regime. Many academics

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For interviews with
Faouzia Charfi and
Hamed Ben Dhia see:
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and intellectuals soon rallied to the cause and, on 11 January, the regime shut the universities and schools to stop protests spreading there.

Tunisian researchers are now free to express their frustration with the regime's suppression of human rights — and its management of the higher-education and research system. To judge from publication rates and other metrics, the country has a fairly strong science and higher-education base, which compares favourably with its Arab neighbours (see ‘How Tunisia's science measures up’). Although proud of the figures, scientists argue that they mask a reality that is much less upbeat.

SOLID FOUNDATIONS

Researchers contacted by *Nature* unanimously credit Tunisia's strong science and educational foundations to Ben Ali's predecessor, Habib Bourguiba, who became president in 1957, the year after Tunisia gained independence from France. Bourguiba built a progressive, modern, secular state, and made developing the country's human capital, empowering women and bolstering education top priorities.

At independence, Tunisia had no higher-education system and almost no research base, with the exception of some agricultural research and colonial outposts such as France's Pasteur Institute in Tunis. Bourguiba created the country's universities and got them running with the help of imported French academics. The result has been that Tunisia has long had one of the best-educated populations in the Arab world. Bourguiba was a dictator, but he was a relatively benign and enlightened one, say researchers.

His rule ended in 1987 when, on 7 November, Ben Ali staged a bloodless coup. The new government promised greater freedoms but quickly established a brutal police state. “We went from an honest autocrat to a dishonest and bloody autocrat,” says Ben Dhia.

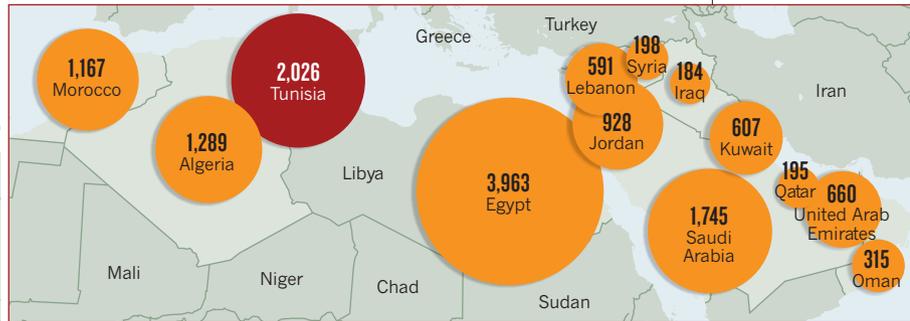
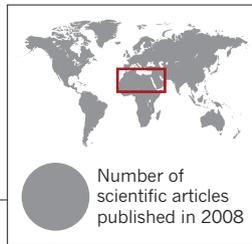
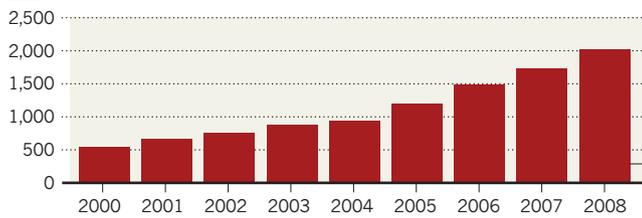
Ben Ali's regime maintained support for education and science, with science funding growing from 0.43% of gross domestic product in 1999 to 1.02% in 2007. Little brain drain took place: scientists who did leave, mostly for France, usually did so for better pay and research conditions. But Tunisia offered a reasonable standard of living, and many preferred to stay, says Ben Dhia. “One got used to living with limited liberty,” he says. But the government's totalitarian reflex to control Tunisia's citizens, including its researchers, stifled the development of a dynamic research and innovation system.

Universities and researchers had little freedom to develop their own strategies, or even to choose who they worked with, says Faouzia Charfi, who was last week appointed secretary of state for higher education in the current transition government. Charfi is a physicist at the Preparatory Institute for Scientific and Technical Studies in Tunis, and the widow of the late Mohamed Charfi, former president of the Tunisian League for the Defense of Human Rights and a former education minister. ▶

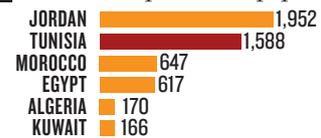
HOW TUNISIA'S SCIENCE MEASURES UP

Tunisia scores well among nations of the Arab world on research metrics such as its growing number of research publications (1); its relatively high proportion of researchers (2); and the extent of its research funding (3).

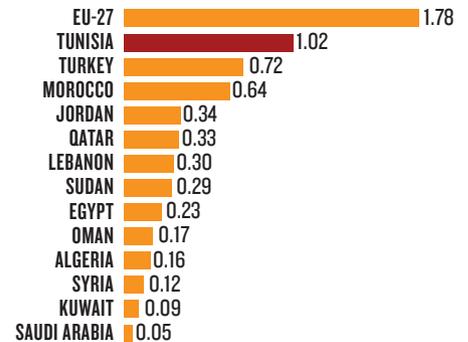
1 Number of publications (Science Citation Index)



2 Researchers per million population



3 Gross domestic expenditure on R&D as a percentage of gross domestic product



Data in 2 and 3 are from 2007 or latest year available. Some of these figures are estimates.

Multiple permissions were required for almost everything, from leaving the country to meeting with foreign researchers, says Ben Dhia. Tunisians organizing a scientific conference needed to submit to the regime all the presentations that speakers would make, and the regime also required universities to send detailed weekly reports of how all staff spent their time, he says. The regime imposed an “intellectual blockage” at every level of university life, which disempowered researchers and stifled innovation, adds Charfi.

Ben Dhia and Charfi tell similar stories of how regime bureaucrats thwarted any attempts to build independent links with industry. Universities were also prevented from developing their own research strategies. Ben Dhia recalls having to create labs and institutes even when he felt they made little sense. Universities became machines for generating papers and degrees to meet targets, but became disconnected from societal and innovation needs, he says. The administration was scared of letting individuals take the initiative, adds Charfi: “You had no freedom to manage your own institution.”

Now, the revolution has fired people up to make the country succeed. “Scientists will for the first time have the liberty to decide their

own future, and not have it imposed by RDC members,” says Chikhaoui.

A key challenge for reformers is the nepotism that has become ubiquitous in Tunisia’s universities. Ben Ali himself appointed vice-chancellors, and even lower-level faculty members were chosen more for allegiance to the ruling party than for competence. Dorra Cherif, adviser to the director at the Tunis Pasteur Institute, says that scientists, like many Tunisians, often joined the RDC out of pragmatism rather than because they supported the regime.

LONG ROAD TO REFORM

“It is clear that the system must absolutely change,” Charfi says, adding that the new government intends university presidents and boards to be directly elected — perhaps by academic panels — in the future. But, she adds, the government wants to “avoid a witch-hunt”: those researchers and university administrators who are competent and committed to change will be allowed to share the country’s fresh start.

The transition government is expected to organize elections within the next two months, and Charfi told *Nature* that it hopes to reopen universities and schools “without delay”, possibly as soon as this week. Symbolically,

university chairs named after Ben Ali will be renamed, and students arrested by the regime will be reintegrated into universities so that they can finish their studies, she says.

In the longer term, Charfi and other members of the transition government are supportive of maintaining Tunisia’s science funding, but she emphasizes that university training needs to be revamped to produce creative, entrepreneurial graduates who are better trained to enter the job market. “There is no point in having degrees that lead nowhere,” says Charfi.

This could help to address a key issue that triggered the revolt: many who hold advanced degrees are unemployed. Similarly, a profound rethink of university–industry relations will be needed to help to create jobs, Charfi says. If a stable democracy emerges in Tunisia, foreign investors that were previously discouraged by the regime’s corruption are likely to be more willing to invest there.

Charfi has few illusions that change will come overnight. “We have to be realistic, we won’t have stability within 24 hours, but we must be confident,” she says. “I am profoundly convinced that we will accomplish the success of this revolution, this rupture with the past.” ■ SEE EDITORIAL P.443

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