c&en

Latest News
Web Date: March 12, 2018

Scientists at India's government labs struggle to adjust to changing priorities

Budget cuts and emphasis on applied research challenge the Council of Scientific & Industrial Research

By ***K. V. Venkatasubramanian***

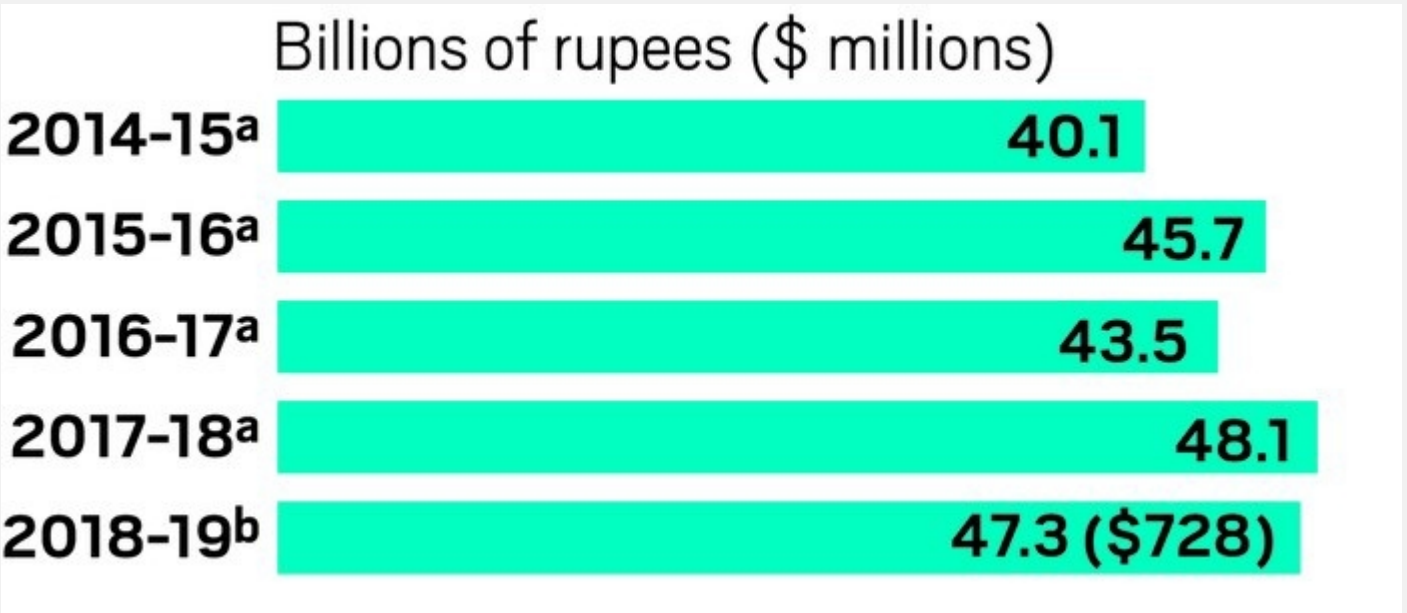
Researchers at India's Centre for Cellular & Molecular Biology are among those affected by the fiscal crunch.
Credit: CSIR - Centre for Cellular & Molecular Biology

Government lab researchers in India are feeling pushed to abandon fundamental research projects in favor of more applied, mission-driven work.

The shift follows deep budget cuts at the Council of Scientific & Industrial Research (CSIR), India's largest R&D organization. "The funding available this year is short by half of what is needed," says Rakesh K. Mishra, director of India's **Centre for Cellular & Molecular Biology <http://www.ccmb.res.in/>** (CCMB), one of 38 CSIR labs across the country.

Frustrated and angry, many scientists hesitate to openly voice their concerns because they fear retaliation.

"Many research projects have been affected. Projects cannot stop overnight, so we continue what we can with the reagents we have," says a senior scientist from a New Delhi-based CSIR lab who asked to remain anonymous. "The institute is functioning at minimum running costs."



India's government lab funding
Adjusting for inflation, CSIR will get a slight budget decrease under Prime Minister Modi's proposed budget for the coming fiscal year.
a Numbers adjusted for inflation to 2018 rupees using the combined rural and urban CPI in January before the start of the fiscal year.
b Proposed; figure converted from Indian rupees to U.S. dollars at the March 7 exchange rate of $1.00 = 64.98 rupees.
Sources: CSIR, Ministry of Statistics & Programme Implementation.

The changes began in June 2015, when CSIR's lab directors agreed to **work toward earning some of their funding <http://pib.nic.in/newsite/PrintRelease.aspx?relid=122489>** through commercializing technology or developing partnerships with industry. The lab directors also agreed to support a set of government priorities: **Smart Cities Mission <http://smartcities.gov.in/content/>** to upgrade infrastructure and services, **Digital India <http://digitalindia.gov.in/>** to use information technology to advance public services, **Skill India <http://msde.gov.in/>** to provide vocational training, **Ganges River cleanup <http://nmcg.nic.in/>** , and **sanitation improvements <http://www.mdws.gov.in/>** .

Then, in 2017, implementation of India's Seventh Central Pay Commission recommendations for higher pay and other benefits for government employees and **retirees chewed up most of CSIR's budget for the current fiscal year**

<https://cen.acs.org/articles/95/i26/Indias-government-labs-face-fiscal.html> , which runs from April 1, 2017, to March 31, 2018. CSIR was left with 5% of its funds to pay for instruments, supplies, utilities, travel, and maintenance. Looking ahead, Prime Minister Narendra Modi's **proposed budget for 2018 <https://cen.acs.org/articles/96/i8/Indias-science-technology-funding-raised.html>** will leave CSIR with a 1 to 2% smaller budget for 2018–19, when numbers are adjusted for inflation.

Adding to CSIR scientists' ire is a change in how India develops its science and technology budgets. Formerly, scientific departments and autonomous bodies such as CSIR were consulted during the budgeting process, and the budget was set for five years, says Swaminathan Sivaram, a senior scientist at the Indian National Science Academy, which is not part of CSIR. Now, budgeting is done annually, as it is in the U.S., and scientists are not as involved, Sivaram says.

Under pressure to raise funds, many research labs have accelerated commercialization of technologies to create external funding. CCMB has licensed out several technologies, such as **a type of Samba Mahsuri rice <https://blog.mygov.in/csir-ccmbs-development-and-commercialization-of-improved-samba-mahsuri-rice/>** that is resistant to bacterial blight and was licensed to Metahelix Life Sciences in 2015, Mishra says.

Overall, CSIR now "earns about 25% of its budget from external sources and is strengthening its patent portfolio," Girish Sahni, CSIR director general, says. On average, CSIR files **about 300 Indian and 250 foreign patents per year <http://www.patestate.com/>** , and it owns 90% of U.S. patents awarded to any publicly funded Indian R&D organization, Sahni says. CSIR currently licenses about 14% of its patents and has identified about 200 technologies for commercialization in diverse areas, he adds.

The push to bring in funds through commercialization has critics. "CSIR is bending backwards to sell its technologies even without proper testing," says Soumitro Banerjee, general secretary of the nonprofit Breakthrough Science Society. As an example, Banerjee points to **concerns about lack of clinical evidence <https://doi.org/10.1016/j.jaim.2016.08.005>** for a CSIR-developed diabetes treatment known as BGR-34, which is derived from plant extracts known in traditional ayurvedic medicine. "The problem is the push towards self-funding and showcasing indigenous products rather than doing good science," Banerjee says.

Nevertheless, CSIR has been ordered to bring in half of its budget from external sources by 2020. "We are confident that we will achieve a major chunk of our sustainability cost in just a few years," Sahni says.

"However," Sahni adds, "earnings don't just mean monetary ones to CSIR per se but should be quantitated in terms of value brought to society."

To that end, India's scientific community has some outreach to do. "Public funding of science is looked at as charity," says Sivaram, who led CSIR's National Chemistry Laboratory from 2002 to 2010. The country has lost sight of how government investment in science underpins a strong economy, he says.

That change in view is at least partly scientists' fault, Sivaram concedes. "Our present-day science comprises old stories which have become outdated," he says. "There is a need to construct a new science and public policy framework and dialogue that will defend future science."

Going forward, CSIR as a whole must focus on a few chosen technologies in which it can be a global leader, says former director general Shri Krishna Joshi, adding that "this would be a great change; it would be hard to achieve but can be done."

Chemical & Engineering News
ISSN 0009-2347