Photo: Embrapii



Brazil needs three times as many scientists and engineers

Jorge Almeida Guimarães
CEO, Brazilian Research and Industrial Innovation (Embrapii)

Solange Monteiro

Embrapii is considered one of the most pragmatic of public agencies. The organization, whose job it is to encourage business innovation, funds up to a third of the projects in its portfolio with grants. The rest of the project funding is divided between the company and the technology center that will carry out the project. At Embrapii since August 2015, veterinarian and biochemist Jorge Almeida Guimarães is optimistic about raising demand for projects in 2016 despite the economic recession. Previously president of Capes (Coordination for the Improvement of Higher Education), he says the country's investment in research and innovation is far below that of developed countries and it must train more scientists and engineers. Guimarães emphasizes that in addition to financial support, Embrapii has collaborated to improve management in institutions such as technology research institutes to facilitate interaction with the productive sector.

What are the main obstacles to investment in innovation and technology?

Developed countries invest at least 2% of their GDP in science and technology (S&T). They have at least 3,000 scientists and engineers per million population. Brazil has been investing about 1.2%, and we have only 700 scientists and engineers per million. In other words, we need to quadruple the human resources in this area, and almost double investment in S&T as a percentage of GDP as well as investing more in research, development, and innovation. In addition, in developed countries, companies pay 70% of the total invested in S&T, while in Brazil public funding pays 56% and companies pay 44%--which includes a large share of investment by state-owned oil company Petrobras. If we can raise private sector investment in S&T to 0.9% of GDP within two or three years, and can count on the support of state and federal governments to raise public investment to 1.1%, and also triple the current number of scientists and engineers in Brazil, then yes we will be on the right path.

How has the downturn in 2015, especially in industry, affected Embrapii's activity?

There was no negative effect. We invested R$126 million, of which one-third (R$42 million) was grants that did not have to be repaid. These funds financed projects. We had no difficulties in 2015 and we do not expect any in 2016.

Embrapii's budget is R$1.5 billion for 2014–19. However, that would imply an average annual investment well above that observed so far in the period. Is there lack of demand for projects?
Demand has been good. Among the businesses we have today, the project funding disbursement average is 33% from Embrapii, 19% from research units, and 48% from companies. But the business model is new, and we can only invest when the research units sign contracts with companies. To have more projects, we need more accredited research units, and we are expanding the number. In 2015 we worked with 13 research units. This year, however, we will have 15 new ones, and we estimate that from now on we will operate close to the budgeted amounts.

What must a research university or institute do to be accredited to work with you?
The applicant institution, whether public or private, needs to present a proposal for operation for a period of six years based on its previous experience. Its portfolio of skills should describe with evidence areas of activity in which it has operated in the past three years, and a minimum amount of resources coming from contracts with private companies. Once a research unit is selected, we disburse part of the funding, so that it can start searching for companies to partner with. Our experience is that, for every 20 prospective companies, one deal is closed, so the emphasis on attracting customers is important. Embrapii itself is very lean, only 20 people—myself and two directors, three secretaries, and 14 technicians—but the work is very demanding. We do not meddle in institute contract negotiations. But once they are concluded, we require a copy of the contract to know the goals set by the hiring company and monitor the execution of each stage of the project. Our dynamic is different from the long-term financing proposals of a development agency, for which you need to make a report only after a year.

So far, what sectors have been more receptive to Embrapii assistance?
Areas taking the most advantage of our help so far are information technology, oil and gas, and medical equipment. The health sector is not yet responding as we wanted, but we are working on it. Still underrepresented are biotechnology and chemicals, which has an extremely negative external trade balance.

Are you not concerned that the uncertainties generated by the economic and political crisis could reduce the appetite of companies for innovation?
Our view is that the crisis can generate even more opportunities than you can imagine. We continue to receive lots of project proposals from companies. Some sectors in Brazil are already well-capitalized. The export sector is now benefiting from the exchange rate depreciation, it is capitalized, and it is seeking innovation, because they know that their competitiveness depends on innovation, so they will have to invest. Agriculture, health—Brazil is the fifth largest world pharmaceutical market—are capitalized.

Are there risks that budget cuts could compromise Embrapii's activity?
I think cuts are unlikely because we do what is missing in Brazil. It has often been said that Brazil produces a lot of science but few patents because the research does not interact with the productive sector. We are very new within this system, but we are making it happen. Brazil has 60 years of experience in research and development. During this period, state and federal governments have funded a lot of human resource development and laboratory training. Now we are taking the next step, putting this investment at the service of technological development.