



## Q&A: The rise of Algeria's scientific capacity

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### Speed read

- Algeria's scientific research capacity was declining before 2008
- New funding since 2009 has revived the sector, supporting R&D
- The strategy is yielding more labs, publications and links with industry

Algeria's scientific research sector has made progress recently, after a long period of funding delays and stalemates due to a weakening governance (<http://www.scidev.net/global/governance/>) system.

Prior to 2008, the budget for scientific research was very poor, receiving only 0.28 percent of the country's GDP (gross domestic product). The sector's deterioration was reflected in Algeria's meagre scientific outcome, for example the lack of scientific publications and patents registered by researchers. It was also reflected in weak cooperation (<http://www.scidev.net/global/governance/cooperation/>) and networking among research institutions such as universities and research centers on the one hand, and the state's economic and social sectors on the other.

In the beginning of 2009, signs of progress appeared, after the government implemented a special strategy to improve the quality of scientific research and promote it until 2017.

To discuss the most important pledges, achievements and new trends in Algeria's scientific research, *SciDev.Net* interviewed Abdel Hafidh Aouragh, director of scientific research and technological development in the Ministry of Higher Education and Scientific Research.

### **To begin with, could you introduce us to the status of the scientific research sector in Algeria before 2008?**

Scientific research was missing from Algerian economy and society until 1998 when the first law for scientific research was issued, giving priority to

the establishment of a national fund to finance the sector. During the first five-year plan, from 1998 to 2002, the work focused on making the concept of scientific research operational 'on the ground', and on the creation of institutions to put it in practice through establishing laboratories, funding research, and hiring researchers.

**Does this mean that the low spending on scientific research was the reason behind its poor status?**

Of course, funding (<http://www.scidev.net/global/enterprise/funding/>) was a major impediment which stifled much progress in scientific fields.

Infrastructure for scientific research

(<http://www.scidev.net/global/enterprise/rd/>) was poor, or in other words, the infrastructure did not support the production of knowledge and the development of technology

(<http://www.scidev.net/global/enterprise/technology/>). Therefore, we went through a stage of apparent weakness in the sector until 2008.

After that, the second five-year plan for scientific research was issued, extending from 2008 to 2012, which saw the creation of the General Directorate for Scientific Research and Technological Development in 2009. The directorate focused on ensuring the advancement of scientific research by strengthening the country's scientific and technological capacity, identifying and providing the necessary research and development methods, appraising the results of this research, and supporting the state's funding for all activities related to research and development.

All this required spending on the sector, which reached 0.5 percent of the GDP.

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**So what has changed after that spending and the strategy designed to advance scientific research?**

Putting in place infrastructure for the scientific research sector was among the priorities of the Directorate. This was in order to present an integrated national system for research, increase the number of researchers and academics, and upgrade scientific equipment and enterprises. Now, we can say that the results are satisfactory.

We have increased the number of research labs in universities from 600 in 2008 to 1400 in 2016. Now, all Algerian universities have research laboratories equipped with world-class research tools in all fields and disciplines. This has come with an increase in the number of researchers in all disciplines — from 1200 to 30,000 professors in universities. In addition, there are now 60,000 doctorate students in the country.

Outside university campuses, there are 30 research centers at the national level, employing 2500 permanent researchers. These centers are concerned with applied research and technological development in particular.

These developments have also reflected positively in the number of scientific publications, where we moved from 12,000 research papers published in high-profile scientific journals in 2008 to 45,000 in 2015. The rate of growth in scientific publications in Algeria is deemed one of the highest globally. Algeria was also ranked highly in scientific publications among African countries, taking first place in some disciplines such as physics, chemistry, engineering and mathematics.

Along with all these developments, a special fund has been dedicated to the establishment of specialized scientific bodies and international partnerships — most recently supporting the inauguration of the UN International Institute for Research and Sustainable Development at the end of 2015, which gives a strong boost to the engine of scientific research.

**But the gap between scientific research and social and economic sectors still exists. Is there a plan to bridge it?**

This was one of the weaknesses of scientific research in Algeria, which we are now working to address through turning scientific ideas into a products or services.

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We have started to adapt scientific objectives to development, economic and social objectives, mobilizing the scientific community and ensuring it is equipped within the research frameworks approved by law, in addition to improving the funding system to match that goal.

**You spoke about funding and also other activities — what has been achieved in this regard?**

For example, we entered into many partnerships with public and private economic enterprises, through which researchers can implement their theoretical research in technological projects to develop Algeria's industry.

We are also working to create a research climate within enterprises, with mixed research teams that include members of scientific laboratories as well as economic and industrial enterprises. There are also financial incentives and tax exemptions, deducted from the National Scientific Research budget, that can be channeled to institutions wishing to invest in the field of scientific research.

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All the mechanisms we have implemented are working towards this goal, as some companies have already started to establish research laboratories in collaboration with scientists at universities and research centers — one example is Sonatrach, one of the country's major oil companies. Many laboratories have also started to open commercial branches to market their research products and offer their services to the economic sector, relying on the financial return of those products for funding.

**This leads us to discuss improving working conditions for researchers in the country. What steps has the state taken to encourage those who have migrated to return?**

I can confirm that confidence in Algerian researchers has returned: the number of economic institutions that resort to Algerian research laboratories to find solutions to their problems, or for innovations to increase efficiency of their production, has been on the rise. Algerian researchers have proven reliable and efficient in using knowledge to develop the country.

It is true that the number of researchers returning to Algeria is very low. Yet we believe that building a strong research system can only be achieved through the development of human capacity in Algeria, creating an environment that encourages creativity and innovation as the only means to promote Algerian scientific research.

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There are indications of stability in human resources at universities and research centers due to an improvement in the living standard of research professors.

The Algerian government is still working to design policies to reverse the brain drain by linking advanced scientists to research centers and economic institutions in the country, using them to transfer technology and knowledge. The aim is to provide professional and social conditions at a level equivalent to their work abroad.

In 2012, the General Directorate for Scientific Research and Technological Development kicked off a programme to support young researchers and affiliate them with foreign academic institutions. The Directorate has also created the 'President of the Republic Award' in specific fields of science, to reward scientists for new ideas and help implement their projects at home.

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