

» INTERVIEW**THE AMALDI PLAN FOR THE RELAUNCH OF ITALIAN SCIENTIFIC RESEARCH**

Interview with the physicist Ugo Amaldi, founder of the National Centre for Oncological Hadrontherapy (CNAO) in Pavia and the proposer of the Amaldi Plan for Italian research.

To increase the percentage of Italian Gross Domestic Product (GDP) allocated to financing both basic and applied public research, starting from 2021, in order to be aligned with Germany's investments in the same sector, equal to almost 1% of German GDP, in 2026. This, in a nutshell, is the request sustained also by a petition launched on the Change.org platform, addressed to the Italian Prime Minister Giuseppe Conte and started from considerations expressed by the physicist Ugo Amaldi. A proposal that must adopt meritocratic criteria for distribution of investments in the four areas considered crucial for research: human resources, projects, infrastructure and technology transfer; and which, thanks to the spin-offs generated, would guarantee greater competitiveness and economic growth in our country. The key points for the relaunch of Italian research, which has already received the support of notable members of the Italian scientific world, are based on an articulated program presented in June of this year by Ugo Amaldi, an internationally renowned physicist and founder of the National Centre for Oncological Hadrontherapy (CNAO) in Pavia, who has always been an influential voice in support of more incisive research policies aimed at developing the great wealth of scientific expertise in our country. Starting from the proven ability of basic research to promote the development and transfer of new technologies, the Amaldi Plan, as it is now called, identifies the increase in public funds to this sector as an effective method for increasing the competitiveness of the Italian industry, whose expenditure in research and development activities remains far below that of Northern European countries. An investment which, in the light of the recognised value of our researchers, among the most productive in the world, would be certain and profitable.*

How and in which context did your proposal come about?

At the invitation of Giuliano Amato, President of the Cortile dei Gentili scientific committee, in March, I joined a group of intellectuals called to discuss the evolution of the most pressing current issues. An initiative that subsequently led to the drafting of a short text in which we illustrated what we felt should be the

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development guidelines to be pursued in Italy and our suggestions for politics and citizens. In this context, I went back to explore a topic I had already focused on in 2008, namely the quality of Italian research. The result of this work was the drafting of the fifth of the six proposals contained in the introductory part of the book "Pandemic and resilience" later published: the fifth proposal is presented in detail in the book itself. More recently, the proposal was adopted by Federico Ronchetti, who had the merit of launching the issue on social media and then a petition, and by Luciano Maiani, who became the spokesman of the plan that emerged from it with Minister of University and Research Gaetano Manfredi.

What are the main points of your plan to relaunch Italian research?

The essence is to double public investment in basic research by taking advantage of the funds provided by the Next Generation EU growth programme, with the aim of achieving Germany's performance. In order to achieve this, I propose a gradual approach that involves allocating 1.5 billion euros immediately and increasing investment, both national and European, to the level of French investment within the next three years, and then being able to do a little better than Germany after another three years. This would mean allocating 0.8% of GDP over the first three years and 1.1% of GDP at the end of a six-year period. In addition to the lack of Italian Government's actions in favour of research, my proposal for public intervention is also motivated by the fact that our country's industries are lagging behind in investment in research and development, which stands at just 0.9% of GDP, compared with 2.1% in Germany, a figure that would have been even smaller without the contributions of state-owned companies. What we need to do, therefore, is to try to do better than Germany, to try to make up for the missing contribution from industry.

Why do you think it is appropriate to invest in basic research?

Despite the limited resources, the trend in total citations of scientific research worldwide shows that Italy, from 2010 to 2015, improved its performance by 20%, while France and Germany recorded a 25% decrease over the same period. We therefore have a productivity per researcher that is no less than that of other countries. An aspect that makes it advantageous to invest in Italy already today, without the need for reforms, because this would result in an assured production of new knowledge, despite insufficient infrastructure and remuneration. A further argument in favour of increasing the funds allocated to research concerns the percentage of female researchers in our country, 47% of the entire community. A much higher number of female scientists than in France and Germany. An investment in this sector would therefore translate into an investment in Italian women engaged in research, who could thus, as they already do, provide their fundamental contribution to scientific enterprise.

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What are the benefits of a possible implementation of your plan?

There are hundreds of studies that have demonstrated the close correlation between increased investment in research and annual GDP growth. In the light of this evidence, if we could increase the efficiency of our technology transfer, a key part of the petition and of my proposal, we would increase the growth rate, achieving important benefits for increasing the economic product of the Italian system. The long-term objective must therefore be to achieve a degree of competitiveness equal to that of France and Germany. Finally, a key advantage that could be derived from the increased availability of resources in science would be the possibility of encouraging young people to embark on an academic career. In fact, we could significantly increase the number of graduates in Italy, among the lowest in the Eurozone, by providing young people with career prospects that are currently lacking.

Do you think that the pandemic has had the merit of refocussing the spotlight on research and the importance of its adequate funding?

Yes I do, which is why I cannot understand the lack of support for the petition. Nevertheless, I believe that awareness of the importance of public research in the life of all citizens is an aspect that is part of the process of increasing scientific literacy that has taken place over the last ten years: Italians have realised that there is a need for scientific skills to solve problems. I therefore believe that, also for this reason, this is an appropriate time to call for a greater effort in financing research.

In your opinion, should the funds that will be allocated with the Recovery Fund be partially allocated also to research?

The opportunity to have funds of the Recovery Fund available to rebuild the country is unique and unrepeatable. We are investing billions in school desks to get students safely back to classrooms, a common sense approach which everyone should agree on and that goes in the right direction. But we must also think about the future of these young people who will soon have to enter the world of work, a world which they will be precluded from if Italy does not take the road of development and growth. It is therefore necessary that, despite pressure to direct its attention to other problems in our country, the Government looks towards the new generations, which are the future of Italy. ■

**In Italy, public investments in research and development are equal to 0.5% of GDP, of which 0.32% is spent in basic research and 0.18% in applied research (from "Pandemia e Resilienza", CNR Edizioni)*