

Editorial

Italy at a turning point in its ecological research world (or not ?)

Something big is shaking up the Italian ecological research world. Aiming to foster the recovery from the economic crisis of the pandemic years, the European Union allocated an incredible amount of € 750 billion (MEF 2022) in favour of Italy. This is the main capital of the National Recovery and Resilience Plan (NRRP). Indeed, this astonishing incentive is a great news and represents an unprecedented opportunity to foster the modernization and advancement of our Country. A consistent part of this incentive is going to finance directly or indirectly both basic and applied research, including, of course, those in ecology and ornithology.

As scientists, we are used to being sceptical. So far, some doubts and worries must be raised on whether this money is effectively on the way to revolutionising Italian research, but at the same time, if possible, we must assume a positive attitude to contribute to optimising this process. Moreover, we must be conscious of the great responsibility that we are assuming spending this credit, indebting the future generations for the decades to come.

At least two of the different 'Missions' in which the NRRP is structured are of close interest to the community of researchers and conservationists that work in environmental and ecological fields: the so-called 'energetic ecological transition', and the direct contributions to research development.

Mission 2 of the NRRP is devoted to the ecological transition of Italy. In 2018, Italy had 5,600 wind farms, summing up a total capacity of 10,3 GW (Gianni & Benedetti 2019). But the energy production

is at least planned to double by 2030. By this year, Italy must fulfil the legally binding objectives of the 'Fit for 55' EU plan (EU council 2022), thus reducing 55% of its greenhouse gas emissions. In practice, tens of thousands of wind turbines are about to populate our lands and, especially, our seas. It is beyond the aims of this Editorial to discuss whether this energetic strategy is or is not viable. I just want to stress that scientists are indeed worried about how the wide diffusion of wind farms may have deleterious consequences on biodiversity, with birds and bats among the most affected organisms (e.g. Serrano et al. 2020). I think that, as scientists, we should at least demand that professional ornithologists and zoologists are assigned to the proper roles as environmental impact evaluators. We should thus expect that the importance of our role will rise in the years to come. These circumstances may help answer the question that many young people ask when they have to choose their academic careers. *'If I will be a field biologist, can I find a job?'*. My answer is always that *'The world really needs people like you!'*. And that's absolutely true. Not simply Italy, but the World urges field biologists, ornithologists, environmental experts and people that really understand what *biodiversity* is! These people are our only chance to successfully face the unprecedented challenges posed by climate change, energetic crisis, and ecological hecatomb. However, despite this urgency being obvious to me as well as to some other million people out there (e.g. 'Fridays for Future'), I always have to admit with young students that *'it's not easy to find a position with this specialization'*. Again, that's the (frustrating) truth.

Can the NRRP be the opportunity to change this?

Let's restrict the field of interest to research-related careers. Mission 4 of the NRRP promises to open 6,000 (yes, six thousand!) new PhD positions in the next months (MEF 2022) since the whole money must be spent within 2026. Of course, this sounds great: a revolution for the Italian academy! As a good sceptical scientist, however, I see here at least two orders of problems. First, the salary question. A PhD in Italy earns a monthly gross salary of € 1,353 (D.M. 247, 23-02-2022). This is often below the living costs of major cities. Not only can't you plan to have a family, but you could probably neither pay a flat rental with your income. Indeed, this is a pressing problem well beyond Italy, as stressed in a recent Nature editorial (Nature 611:8, 2 Nov 2022). Wouldn't it be better to open fewer but better-paid positions? Second, what is occurring later on, after the PhD? Only a minor fraction of PhD graduates find employment in academia, in Italy. Most of them have no other option than to turn to non-academic jobs, a phenomenon called *segmentation* (Marini 2022). This is not necessarily bad: we live in a knowledge-based society which favours continuous growth in the mean education level, where PhD-holding people use their skills beyond academia (Hnatkova et al. 2022). But the point is whether the Italian research system is prepared to take profit from these new doctors and improve itself. At the current conditions, I would say not. The number of post-doc positions is risible compared to those of the PhDs, creating a bottleneck.

Potentially, NRRP may broaden this bottleneck. The most relevant case is the new-born National Biodiversity Future Centre (<https://www.nbfc.it>), entirely financed by NRRP. An ambitious infrastructure, coordinated by the National Research Council (CNR) and involving several universities, aimed to revolutionise the quality of biodiversity-related research in Italy. As mentioned above, this sounds wonderful. Literally, hundreds of post-doc and research positions are opening daily to fulfil the sudden need for biodiversity researchers in Italy. A few days ago, the University of Palermo opened in a single rush a call for 136 research positions (UNIPA 2022), almost unbelievable!

Unfortunately, I'm not sure this will be an happy-ending story. Primarily, Italy has a structural, long-lasting and major debility in accepting foreign qualifications. Not only holders of extra-European degrees but even those that obtained their MSc or PhD in EU countries have to pass through a winding, time-consuming and costly procedure to get their degree recognised in Italy, frequently failing on the road. A problem that (as for PhDs) sums up to the low salary perceived by post-docs in Italy (mostly ranging from € 1,420 to € 1,650), especially when compared with those of other neighbouring countries (up to € 6,500 in Switzerland!). For these reasons, Italy is fatally poorly attractive to both foreign talents and talented Italians who graduated abroad! These problems are radicated in the Italian system and older than most of us can remember.

Sticking to the current NRRP, the MAIN criticism is that 100% of the new research positions are conceived to be *non*-permanent. One may argue that this was unavoidable. But that's not true. Somebody, at some point in the chain that organized the NRRP funds, decided that the creation of permanent positions was not a priority. Somebody that was in Italy. Indeed, other EU countries had radically different approaches. In Spain, as an example, the national correspondent to Italian NRRP include (objective C17.14., 'New scientific Careers') early stabilisation of research personnel as a primary target and announced the introduction of a tenure track career model (MCI-NN 2022). We could have done the same in Italy too. Maintaining for long years researchers in non-permanent positions is not only a wicked but also a dumb strategy. Researchers with permanent positions feel better (Castellacci & Viñas-Bardolet 2021), produce more (e.g. Lafuente & Berbegal-Mirabent 2019; Cirillo & Ricci 2022) and, moreover, work to attract new funds and projects. Hiring permanent researchers today means funding basic research (and of higher quality!) for the years to come. On the contrary, creating hundreds of temporary positions today will produce frustration and a stock of super-trained but; soon unemployed, researchers. This is a drama that

we must expose as scientists, pressuring politics to significantly increase the proportion of permanent personnel of our research system, while making it more attractive to foreign talents. In this sense, the deep 'architecture' of the NRRP looks like a lost opportunity.

Even so, I want to see the cup as being half full. Hundreds, probably thousands, of researchers out there are conscious of all the abovementioned problems and will work during and beyond these 'NRRP years' keeping in mind that we are facing an unprecedented opportunity, possibly representing a turning point for our research system.

I can firmly state that this is happening at least in the field that I better know, ornithology. I'm proud to announce here that many of us are involved in organising the next Italian Ornithological Congress (<https://www.cio2023varese.it/en/home/>), which will see its XXI edition in September 2023. For the first time, the conference will be entirely bi-lingual, aiming to strengthen the connections of the Italian ornithological community with the EU ones. We have already received contributions from at least five more countries. A great success for a national conference! Up to the 31st of March, there is time to submit your abstract, we are looking forward to receiving your contribution as well.

If politics would pay more attention to the voice of researchers, I'm sure that we could still make the most out of these NRRP funds. We have a few years to do so, starting... yesterday. So, back to work, having in mind that we want a world in which eventually revise the recommendation to pupils and state a warm '*Of course, study as a field biologist and get your PhD, is a promising career!*'

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