

We cannot afford to stand still

Prosperity and scientific achievement are two sides of the same coin. Those who want prosperity have to invest in science. Nations the world over have recognised the connection and are pouring additional funding into research and innovation. Who would have thought, ten years ago, that our Directors would now be receiving lucrative offers from South Korea? That is competition that we are facing up to, and from which we are also benefiting. However, we need to be able to keep up.

We at the Max Planck Society are doing a great deal towards this ourselves: Not only do we take existing knowledge forward, we are constantly looking for groundbreaking discoveries, as our organisation is governed by the principle of constant renewal. This is not convenient, but it is necessary if we are going to seize on research trends from an early stage. To this effect, we have refocused one in six of our institutes and established nine new institutes over the past twelve years. But we also need the support of policymakers and society. Only if the Max Planck Society is given sufficient financial scope will it be able to maintain its capacity for renewal and keep pace with the global elite. And that is crucial for our country. A high-tech nation needs globally leading research institutions if it is to remain in the vanguard of the innovation drivers.

Encouraging signs emerged from the coalition negotiations in autumn 2013, with science and education set to retain a high priority. But then the grand coalition failed to move forward for some considerable time. If it ends up, as appears likely, that the annual budget increases under the Pact for Research and Innovation need to be funded by the federal government alone and fall from five to three per cent after 2015, this will have consequences, not only for the financial structures of our science system but also for the Max Planck Society's existing activities. Nominal gains are sadly not real gains. The very fact that we are dependent on a very specific basket of goods gives us a science-specific inflation rate of some 2.5 percent. Added to that – and given growing international competition – comes the price of scientific progress: making new appointments or fitting out new laboratories is becoming steadily more expensive and the technological expense is increasing rapidly for any organisation which aspires to go on broadening the boundaries of knowledge.

It was good that we had a lively debate on the science system's future structure in 2013. The Max Planck Society participated in this discussion critically and constructively by contributing a position paper. However, this conceptual



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work can only bear fruit if the structural underfunding of institutions of higher education is also overcome. The amendment to the Basic Law (article 91b) and a stronger involvement of the federal government alone cannot be expected to resolve this. Which is why the governments of the federal states, which will no longer have to find scope in their budgets to co-finance the annual Pact increases, need to be compelled to commit the funds thus freed up to benefit the universities in spite of all the budgetary pressures and the debt brake they are experiencing.

The debate made it equally evident that the successes of the Excellence Initiative need to be stepped up. It is through them that German research has become significantly more competitive, and studying in Germany is now more attractive for young people from other countries. Indeed, the number of foreign students enrolling for a higher education degree in Germany topped the 100,000 mark for the first time in 2013.

In a bid to make these trends permanent, the Scientific Council is encouraging further profile building and differentiation in the higher education sector. This fits in well with our proposal for the establishment of locations of excellence and of distinctive profile. The latter are formed in places where cutting-edge research takes place in a certain field, like Bonn, for instance, which has established itself as a "Mecca for mathematics". Locations, like Munich, which cover a very

wide range of disciplines, already number amongst the ranks of hubs of excellence – it must be the remit of a science-led commission to identify other such hotspots and to support them with specific measures. This is only feasible if the “strength of the system”, as the Scientific Council emphasised, is taken into account: that we have a successful, specialised science sector in which the institutes of higher education and the non-university institutions with their complementary missions both provide new impetus. An important aspect for continuing, targeted networking.

Given that 90 percent of knowledge is created outside Germany and that demographic change makes us dependent on talented young scientists from all around the world, the Max Planck Society is particularly called upon when it comes to the future development of Germany as a research location: on the one hand, we bring internationality into the locations of distinctive profile and of excellence, and, on the other, we promote their external networking with the world’s best institutions. One instrument we can use here is the Max Planck Centers: platforms for institutionalised cooperation within which our scientists work together with top colleagues from all corners of the globe in specific research disciplines. To this end, they share expertise and costs alike, and benefit from synergies in the use of expensive infrastructure. This Center concept can be expanded to Germany as a nation, as we proposed in our position paper. New Centers could be founded with universities in Germany and abroad; it would also be conceivable to open existing Centers overseas to German partners and to expand them. Compared with other concepts for profile building, this model offers excellent prerequisites for ensuring the desired international compatibility. That is because Max Planck can serve as an established brand name for cutting-edge German research abroad.

Centers which have been running some time are already having these kinds of effects for their respective locations: thanks to the Indo-German Max Planck Center for Computer Science the number of Indian junior scientists has risen markedly, not only at the involved Max Planck Institute for Informatics but also at the Max Planck Institute for Software Systems. The Center run in conjunction with the University of British Columbia has led to a tenfold rise in the number of Canadian students at the participating institutes. This Center, which carries out research in the field of novel quantum materials, is now receiving another partner in the form of the University of Tokyo. Convinced of the merits of the concept, the Japanese are bringing additional funding into the collaboration.

To date there are 14 Max Planck Centers, plus five international institutes; the networking is reflected in the results: Almost two-thirds of all Max Planck publications are produced in international cooperation. Nearly half of the Scientific Members appointed in the past twelve years have a foreign passport, with many of them coming from the world’s leading addresses. Furthermore, the latest call for centrally announced Max Planck Research Groups makes it clear that these posts are viewed internationally as a significant career springboard. Some 700 junior scientists, male and female, from Yale and Princeton, MIT and CalTech, Janelia Farm and ETH Zurich – have applied for 18 Group Leader posts. In the final round, there were five candidates from Harvard alone on the shortlist.

This level of internationality is a product of our mission for leading-edge research, which can only be fulfilled if we reach the best scientists in the world. It also, however, benefits Germany itself and is furthermore dependent on the extent of our capacity for renewal. If the non-university institutions are compelled to work within the confines of a Pact with only three percent growth, it will be difficult to develop the universally promised initiatives to strengthen Germany as a research location; indeed, it will be hard to even maintain the current level. Reliable and needs-based budget increases under the Pact for Research and Innovation are essential.

Naturally, we are putting into practice the joint goals we identified with policymakers, be that in the form of the initiatives we are implementing to improve the support of junior scientists or the measures we are taking to acquire many more female scientists at all career levels. But the science sector must be permitted to retain its autonomy. It is not the job of policymakers to dictate down to the last detail what we should research and how we should proceed. Only unfettered basic research can yield groundbreaking innovations. They can’t be bought in a discount store. Quality has its price – in science as well.



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