

A few notes on science in Ukraine

Anna V. El'skaya

The brutal colonial war waged on Ukraine by Russian Federation since 2014, and especially its latest “all-but-nukes” phase which started a year ago, has severely impede the development of Ukrainian science. Many of our scientists went to the frontlines to defend our independence; many more had to flee the bombardments. It appears that the aggressor has been targeting research institutions, museums, and libraries, as well as hospitals and schools. The resulting disruption has jeopardized decades of dedicated research and the research infrastructure Ukraine has built up.

What the Ukrainian and the international scientific community must do after the Ukrainian victory on the battlefield

1. Decentralization combined with competitive funding models
2. Centers of scientific excellence

We have largely missed the opportunity to introduce structural changes into the organization of Ukrainian science in the 90 s. Only in the last years were steps taken to develop a model based on decentralization and a competitive system of financing. The National Research Fund of Ukraine was established in 2018, and should direct its activities toward the comprehensive development of Ukrainian science. So far, the fund has organized several national competitions on current scientific issues and, importantly, with active participation of international experts. The National Academy of Science (NASU), in turn, began expert evaluations of the institutes' activities, openings of multidisciplinary programs on a competitive basis, and new laboratories and grants to support young scientists. At present, financing of Ukrainian science is critically low, but the efforts detailed above should continue, nevertheless. We should not repeat our previous mistakes during the after-war reconstruction. The funding model should be competitive, which can only be assured by independent international committees of experts. We need to step up the funding in Ukraine and give it to those who are doing world-level research, and international donors will be well positioned to help Ukraine with both of these tasks.

The prevailing part of scientific potential of Ukraine is concentrated in nearly 170 scientific organizations of the NASU with 30 000 employees. Any hasty upheaval will lead to chaos and debilitating consequences. In my view, we need a serious modernization of NASU with a transformation into a structure similar to the CNRS in France. The CNRS makes effective use of its huge scientific potential based on a competitive system, and with a powerful institute of experts, including international ones. I hope my notes here inspire a careful discussion as this issue is so important for the country that it should be discussed and designed deliberately with inclusion and support of the broader Ukrainian scientific community.

Moving forward, it is important to use the potential of the NASU while rebuilding scientific infrastructure. One way of doing so, which also draws from the experience of other East

European countries like Poland and the Czech Republic, is to create dedicated Centers of Excellence affiliated with a particular institution. I believe the Centers of Excellence, when properly funded via EU donors and programs, can provide a platform for shared instrumentation and spread expertise by hosting scientists visiting from all regions of Ukraine through the support of short- to medium-term fellowships